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THE BUILDER

A RECORD OF ARCHITECTURE AND CONSTRUCTION.

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THE PERIODIC TIDES OF STYLE.

ARCHITECTURE, though described by Ferguson as the history of civilisation written on stone, does not necessarily reflect the general progress of civilisation with exactness, rather following a course of its own influenced by contemporary civilisation, but showing a tendency to ebb and flow from period to period. Civilisation, if judged from the broadest standpoint of the diffusion of knowledge, humanitarian conceptions, and the increase of wealth of the community, does not to any marked extent ebb and flow unless disturbed by some world calamity in the shape of war or pestilence. In one country the manifestations of art show few signs of mutation through an epoch of something like four thousand years, for in Egypt the work of the Ptolomies is closely similar to that of the Pharaohs, though in the later epoch the influence of Rome had transformed the conditions of the ancient world. The spell of the East and the traditions of the past proved a barrier which stilled the waters which ran so strongly elsewhere, and the temples of Philæ and Edfou reflect a past rather than a contemporary stage in the world's history. Elsewhere the power of Rome and the conditions of Roman civilisation were stamped on the civilised world to a great extent regardless of local traditions, climate, or site. Nor did Roman architecture indicate the gradual decay of a virile, hardy people, but showed throughout its long history the same clear evidence of constructional ability and a masculine purpose. Many of the later Roman buildings contain the germs of conceptions carried to fruition in the age of the Renaissance, but the vitiation of political and national life is by no means strongly marked in any series of Roman buildings.

If we except from our survey Rome and Egypt, where architecture would seem to have been more unchanging than the civilisations of which it was an outcome, we are confronted with the periodic waxing and waning of the "styles" for the last nineteen hundred years, though in that period the nations of Europe have been, with occasional set-backs, evolving a higher and more complicated from a lower and more elementary stage of civilisation. After the long period when the struggles of Europe to repair the disaster of the overthrow of the Roman Empire were fittingly expressed in Romanesque architecture, we have the amazing spectacle of the rapid growth, development, and decay of Gothic art, all comprised within a period of some three centuries, certainly the most astonishing in the whole history of æsthetic development. If architecture was a parallel development to contemporary civilisation, we should expect to see contemporary civilisation take some new form, as artistic expression did during those three centuries, but the history of the countries in which it waxed, waned, and disappeared beneath the rising flood of the Renaissance exhibits no such sudden change. From the time of Henry II. to that of Henry VII. we were slowly progressing towards better things, but the process was but part of that gradual rise from a more primitive to a more complex civilisation which has gone on for centuries. The Black Death which halved the population of Western Europe was marked in England and France by a cessation of building which formed the starting-point of the development of Perpendicular and Flamboyant art; but the changed manner, noticeable as it was, is slight compared with the influences unloosed by the Renaissance throughout Europe.

Only in Italy, whose soil covered the ruins and remains of ancient Rome, and where the instincts of the people rendered the new change more of a reversion to a familiar type than an innovation, was the movement anything less than a revolutionary one, but a revolution we should scarcely gather from the history of the times were our historic monuments effaced. And with every succeeding period since that of Elizabeth and James we have seen the tides of æsthetic feeling ebbing and flowing sometimes in one direction and sometimes in another, and yet all the time our people have been gradually winning their way towards the conditions of life now obtaining in the civilised world. And what can be said of the æsthetic conditions which have marked the last century, one in which we have opened the casket of the art treasures of centuries, an age in which we have acquired knowledge, but fail in the ability to build as our forefathers did when they produced the things of beauty which are "a joy for ever"? Is the history of civilisation necessarily written on stone, or is it subject to tidal influences, which are things apart from civilisation, as the history of the world has partially demonstrated to us?

A study of every history of architecture written brings these questions freshly to our mind, and the last two volumes which complete Russell Sturgis's "History of Architecture"* suggest the same reflections. Mr. Frothingham brings to his task great knowledge and industry, but his books are perhaps happily more descriptive than analytical. We have heard the theorists on architecture of one age discounted in the next, and possibly the greatest service a writer can do is to encourage study by promoting enthusiasm rather than by explaining his own gospel to a world which may soon discard him in favour of a later prophet. For when Mr. Frothingham says, "It is unimportant to know who built a Gothic cathedral; it is the work rather of an era than a man. But it is absolutely imperative to know who built a Renaissance palace. Art biography is now to overshadow art history," he is using meaningless rhetoric. What is important in either case, if we can obtain it, is a knowledge of the intention and aims of the builder, and a Renaissance palace can be analysed as a work of architecture in precisely the same way that a Gothic cathedral can be.

That we study the biographies of the Renaissance architects is due to the fact that the information is available and interests the large body of those to whom the personal equation is always fascinating. The great and absorbing problem concerning mediæval architecture is the extent to which it was the outcome of a master mind and the degree to which it can be attributed to a republic of craft workers. The case for the independence of collective workers would seem, save in very early times, to be a slighter one than we have formerly been inclined to think, for we have numerous instances, like the spire of Ulm Cathedral,† finished in our times from drawings which have come down to us from the Middle Ages and Ratisbon, where there is evidence that the final design was a selection from several made in competition. These tend to make us think the necessity of direction was felt and acknowledged in the past as in the present. In another sentence we are told that "as inertia is much simpler in its manifestations than action, the forms and norms of the Renaissance were as simple and stable as those of Gothic were complex and fluid." We question whether a statement of this kind will pass muster with those who look through Mr. Frothingham's last volume and reflect on the amazing variety and complexity of the forms assumed by the Renaissance in different ages and countries.

* "A History of Architecture." Vols. I. and II., by Russell Sturgis, A.M., Ph.D. Vols. III. and IV., by A. L. Frothingham, late Professor of Archæology and the History of Art at Princeton University. (Doubleday, Page, & Co., Garden City, New York. 25s. each volume.)

† See our inset illustration this week.—ED.

Such argument is vitiated by the fact that it is based on the Gothic cathedral, not on Gothic architecture as a whole—that is to say, on a special type of building produced in the Middle Ages, and does not apply to other manifestations of architectural expression.

But the value of the work lies in its comprehensive scope, covering as it does the mediæval and Renaissance architecture of all Europe, and illustrated by nearly 900 illustrations. The immense difficulties of writing such a work appear to be fairly well met, but a survey of any history of architecture renders the reader more and more uncertain as to whether mankind's æsthetic development will ever enable us to reach firm standing-ground beyond the influence of that ebb and flow of style which is conterminous with the limits of European history if not with that of the world. We hope that such may be the case, but precedent hardly points in that direction.

NOTES.

School of Oriental Studies, London Institution.

THE King in Council has granted a Charter of Incorporation to the School of Oriental Studies, London Institution, and the Governing Body, of which Sir John Hewett has been appointed Chairman, is constituted. For purposes of the School the buildings of the London Institution in Finsbury-circus have been altered and adapted and a new wing has been added after the plans and designs of Professor F. M. Simpson, F.R.I.B.A., who acted as architect to a Departmental Committee of the India Office in conjunction with H.M.'s Office of Works. The Government Bill, promoted in May, 1912, provided for the vesting of the buildings in the Office of Works, compensation to the proprietors of the Institution, a grant of from £20,000 to £25,000 for alterations of the premises, and an annual subsidy of £4,000 in aid of maintenance. The Indian Government promised a similar grant of £1,250. The Institution was built in the then Amphitheatre, Moorfields, in 1819-20, after designs by Mr. William Brooks, who adapted the Corinthian portico from the Temple of Vesta at Tivoli; the laboratory was designed by W. H. Pepys, F.R.S. The library on the first floor was one of the finest after its kind in London.

Nonsuch Palace.

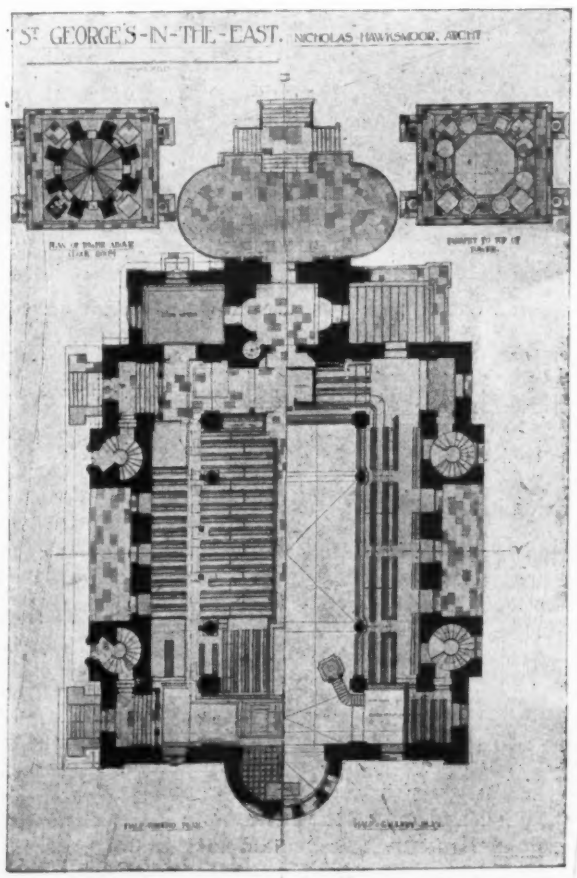
THE sale in the current month of the Ewell Castle Estate embraces the ruins of Nonsuch Palace that stand in the grounds. The palace was begun in 1530 by Henry VIII., who used the materials of Merton Priory, and, for the site and park, appropriated all Cuddington parish, with its manor house and church; it was finished by Henry, Earl of Arundel, by grant of Queen Mary I. The plan comprised an outer or "lower" court, 150 ft. by 132 ft. within, and an inner or "upper" court, 137 ft. by 106 ft. within, upon a higher level; between the two courts was a three-storied gate of freestone having angle-turrets and a lead-covered clock tower; the lanterns of the two great south-eastern and south-western embattled towers were also covered with lead, and in the latter was a big leaden cistern, pipes from which served the whole house. The outer two-storied court was of freestone; the inner, containing the State-rooms, was for the most part timber-framed. The exterior walls were covered with bas-reliefs in plaster. Of that splendid structure, the "Nulla Ejusmodi," there are views by Hoefnagel (1582) in Braun and Hogenberg's "Urbium Præcipuarum Mundi Theatrum," and by J. Hondius (1610) in Speede's "Survey."* Hentzner, who visited England *temp.* Elizabeth, describes the palace and its no less remarkable gardens, with their "piramedes," "wash-boule," "perches" (for falcons), and "six leylack-trees"—the first lilac-trees seen in England. In the survey made for the Commonwealth the materials are valued at £7,020. The palace, which was settled upon the Queens Anne and Henrietta Maria, was bestowed by Charles II. upon Barbara, Duchess of Cleveland, who sold the materials, which became a quarry for Durdans and other houses at Epsom Wells. Thomas Calverley built Ewell Castle about 100 years ago, and Capt. Wiener, who recently bought the freehold, expended large sums in making the Japanese lake-gardens.

The Chelsea Physic Garden.

THE Managing Committee have added the Physic Garden, Chelsea, to the list of London gardens which are now opened to our wounded soldiers. The garden was handed over in 1899 to the trustees of the London Parochial Charities Foundation, who contribute £800 yearly towards its maintenance as a field for the study of botany and vegetable physiology and the culture of medicinal plants. The garden, 3½ acres in extent, has its origin in the parcel of land near the old Swan Tavern in Paradise-row, which the Apothecaries' Company leased from Lord Cheyne in 1673 for their botanical and summer garden and barge-wharf. Sir Hans Sloane—who bought Chelsea Manor in 1712—conveyed it by deed, dated February 28, 1721-3, in trust to the Apothecaries. Eventually the Company, finding their resources were unequal to the charge, applied to the Charity Commissioners, who framed (1899) the scheme now in force. About £7,000 has since been expended upon new laboratories, greenhouses, curators' residences, and other buildings. Evelyn records his visit on August 7, 1685, "to see Mr. Wats, Keeper of the Apothecaries' Garden of Simples at Chelsea." Watts planted in 1683 the four cedar-trees—the first after their kind brought to England—of which the last survivor was finally cut away a few years ago. Phillip Miller, author of the "Gardener's Dictionary," was chief gardener and curator for nearly fifty years. The marble statue (1737) of Sir Hans Sloane is by Rybrach, to whom the Company paid £300 for the work.

The Education of the Public.

ACCORDING to a verse which appears in an evening contemporary the Teddy-bear and other children's favourites claim exemption from military service for the "architect" of dolls' houses. One of our most distinguished architects was anxious to give his daughter elementary instruction in design *ab initio*, so he devised a doll's house according to architectural canons and had it made at considerable cost. But his daughter would have none of it and clamoured for the commercial article, with the result that her disappointed father came to the conclusion that mankind inherits not only original sin but original bad taste. Can anything show more clearly the want of education in architecture than the bestowal of the title architect on the makers of dolls' houses? We should like the law of the land to prohibit the sale of any doll's house or any Noah's ark which had not been designed by a member of the profession, and we should further agitate for the punishment of all those who made such designs for less than 5 per cent.! Only by some drastic measure of this kind can we hope to get things right at the outset, for the child is father to the man, and the disposition to accept the counterfeit for the real should be severely checked at once. We suggest the subject as one worthy of consideration to all those who are in authority in the kindergarten, if that somewhat Germanic word is still in use.



St. George's-in-the-East. (*See page* 433.)

* See also the late H. W. Brewer's drawing, "Nonsuch Palace: a Restoration," in the *Builder* of January 27, 1894.

THE LONDON CHURCHES OF WREN AND LATER ARCHITECTS OF THE RENAISSANCE.

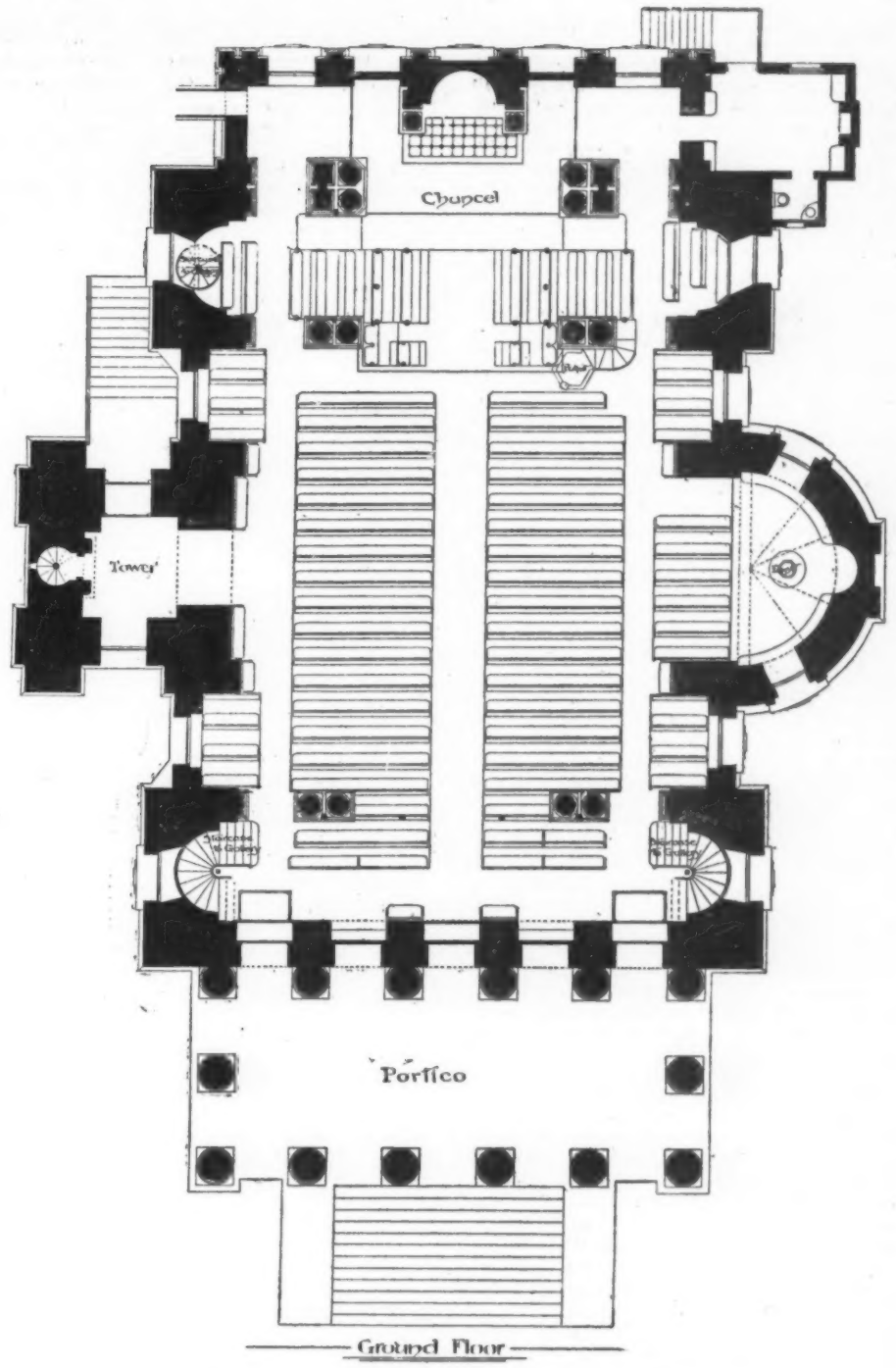
No. XXXIX. — St. George's, Bloomsbury-Square.

THE church of St. George, Bloomsbury-square, was one of those entrusted to Nicholas Hawksmoor (or Hawksmore) on his appointment as first surveyor to the Commissioners for building new churches, in which he was associated with J. James in 1716. The church is heavy and somewhat uninteresting, though it possesses considerable dignity. The altar was originally placed in the semicircular recess in the east wall, and it is probable that it was intended to extend the church eastward after the demolition of adjacent buildings; but the orientation of the building has been altered, the chancel being placed at the northern end. The steeple possesses merits, and was inspired by Pliny's description of the mausoleum of Halicarnassus. It was to have been surmounted by a statue of George of Denmark, the consort of Queen Anne, but the figure placed there eventually is credited with being a representation of our national saint. The church was erected between 1720-30.

No. XL.—St. George's-in-the-East.

St. George's-in-the-East, formerly called Wapping, Stepney, was built between 1715-23 from the design of Nicholas Hawksmoor, and shows the overwhelming tendency of the designer to adopt massive forms and proportions. The apse is an unfortunate addition which is not in character with the rest of the design. Four turrets mark the subordinate entrances, but the most remarkable feature in the church is the singular termination of the tower. The *motif* is a clever one, but it has been spoilt in execution by the defect of heaviness and want of grace which mar the architect's design. The church was estimated to cost £13,570, but actually cost £18,557. An excellent set of measured drawings of it were reproduced in the *Builder* of May 28, 1915.

St. George's Church, Bloomsbury.



St. George's Church, Bloomsbury. (*See Inset Illustrations.*)

CHARING CROSS RAILWAY BRIDGE.

IN a letter to the *Observer* Sir Aston Webb, R.A., writes as follows in reference to Charing Cross Railway Bridge:—

"The Bill came before the House of Lords this spring, and was referred to a Committee of the House, with the Marquis of Bristol as Chairman, the House of Lords passing a resolution, moved by Lord Plymouth, that it be an instruction to the Committee to take into consideration the requirements of the traffic over the river at this point and the effect that this Bill, if passed, will have upon it, and to hear evidence from the Royal Institute of British Architects, the London Society, and others on the treatment generally of this very important part of London. This Committee has just held its inquiry; the Bill was opposed, amongst others, by the Port of London Authority, the London County Council, and, under the instruction to the Committee, by the Royal Institute of British Architects and the London Society. The case for the company was that the old bridge required strengthening in order to allow of an increased traffic, while the London County Council and others asked that the powers be not given until a reasonable time had been allowed for the responsible bodies to bring forward an alternative scheme. It was explained by the engineer to the company that the strengthening of the old half of the bridge was to be carried out by propping it up from the underside, and large drawings were exhibited showing the result of this treatment on the appearance of the bridge.

The principal witness for further consideration was Mr. John Burns, who said he looked upon the bridge and station as an abomination which should never have been permitted, and that he thought everyone, including the company, would welcome its disappearance to the southern side. His view was that we ought to have a new station on the Surrey side, with a new vehicular bridge of the finest description connecting the north with the Surrey side, and that the London County Council, the two adjoining borough councils, and possibly the City Corporation ought to co-operate in providing it, and whilst carrying out a great public improvement, not to the company's detriment, but for the benefit of London as a whole, the Thames might be relieved of that ugly red oxide behemoth that sprawls from north to south. If the Bill was postponed

for two or three years he and others, he said, would do all in their power to get the various authorities concerned to consider their attitude towards an alternative to this bridge, and suggested that the London County Council should co-operate with the railway company at once in devising a more excellent way of a bridge here and a station on the Surrey side.

Another witness, Mr. Andrew Taylor, Chairman of the Improvements Committee of the London County Council, said that while, of course, he could not pledge his Council, his Improvements Committee and the Council were unanimous—there being no dissentient vote—in deciding to oppose this Bill, and therefore he would take it upon himself to bring the matter forward, so that he might get authority to communicate with all the bodies concerned, together, he hoped also, with the Government and the railway company itself. In his opinion the time is now much more ripe than it has ever been for devising such a scheme. All he asked was that he should have a reasonable time after the war to bring their scheme to a focus.

A third witness, Sir William H. Lever, said he felt merely as a business proposition it was an entire mistake to spend money on the Charing Cross Bridge, not only from the point of view of the public, but also of the railway company. Land on the south side of the river is bound to become more and more valuable and more difficult to acquire. The proper and economical way is for the company to acquire it at once. He was perfectly certain that it is impossible to have an adequate station for Continental traffic on the restricted site of 4 acres at Charing Cross, and in his opinion we were quite behindhand in station accommodation in this country. He felt that any money spent, large or small, in patching up the present bridge was practically futile. In his view it was essential to have another road bridge at this point. The congestion of traffic in London is accountable for the extraordinary high rates for cartage in London, which are at least three times that of the dearest town he knew of.

The only other witness called under the instruction was myself, though we had in attendance, and would have liked to call on the traffic and other requirements, Mr. Paul Waterhouse, who has made a speciality of this matter, also Professor Beresford Pite and Mr. Leonard Stokes, on behalf of the Westminster City Council.

In Mr. Paul Waterhouse's view the intention to strengthen Charing Cross Bridge as proposed is wholly to be condemned. During its entire existence it has been an acknowledged blemish and is a definite and appreciable discount to the worth of our town. He considers the removal of the station and bridge inevitable, and that the congested state of the existing road bridges demands a vehicular and foot traffic bridge at this point. The inefficient gangway attached to the north-east side of the bridge is itself an anachronism and calls for reform, and the narrow footway and make-shift staircases should not be tolerated.

Professor Pite, of the Royal College of Art, holds similar views. He points out that a public bridge at this point would shorten the distance from Trafalgar-square to Waterloo by more than a third of the present distance by roadway, and that the north and south sides of London at its heart are separated by a great and exceptional length of unbridged river, that their retention of the present railway bridge makes such a junction of the north and south impossible, and that any money spent upon rendering permanent a structure which prevents the economic development of the south side is money badly spent.

In his opinion the bridge discredits its unique position and is an architectural disgrace to London, and does no honour to engineering design. He quotes Mr. A. J. Balfour, who on May 2, 1892, speaking at a Royal Academy banquet, said:—"I never walk along the Thames Embankment and study the proportions of Charing Cross Railway Station and the bridge which is appended thereto without feeling how monstrous it is that such things should be allowed and that there should be no power of dealing with them."

In my own evidence I urged similar views, that the bridge and station were entirely unworthy of their position, very unsightly and so poorly designed that the station roof has already fallen down, and a large sum is now asked for in order to strengthen one-half of the bridge. It seems impossible to make anything worthy of the present structure by patching it, and it is certain that no worthy improvements can take place at this most important point if the present bridge is retained, as it certainly will be if a large sum of money is now expended upon it.

I gave it as my opinion that a new road bridge at this point is essential, and that it would be an immense advantage. The Chairman of the Committee said he thought they were all agreed upon that, and he did not think there could be any question about it, and Lord Grimthorpe, another member of the Committee, said, "I think we should all like to abolish the bridge if we could." A suggestion for a new bridge prepared by Mr. Niven and Mr. Raffles Davison can now be seen at the Royal Academy.

In the end, however, their lordships passed the preamble of the Bill, and London is again threatened. unless it rouses itself at once with a renewed life, for this "oxide behemoth" is a permanent hindrance to all improvement in this the very eye and centre of London."

THE OPEN SPACES OF LONDON.

MR. A. F. BUXTON (Chairman of the London County Council) presided over a meeting of the London Society, held at the Royal Society of Arts, on June 7, when Mr. Lawrence Chubb gave a lantern lecture on "The Open Spaces of London—Past, Present, and Future."

The Chairman said it was remarkable what a development of feeling there had been within the memory of most of them with regard to open spaces in London. If they looked back thirty years, nobody cared very much about open spaces. They had got Hyde Park and Victoria Park, which was mostly a swamp, but still it was good enough, they thought. Then there came along the idea of opening some of the graveyards, which was an important development. The London County Council took the matter up and did some good work, but he doubted if London was yet fully alive to the immense importance of open spaces. The superintendent of one of their lunatic asylums told him it was his strong opinion that the development of open spaces in London had had an actual effect in the reduction of lunacy.

Mr. Lawrence Chubb said in Tudor times the pulse of growing London was gradually bursting through the narrow confines of the City wall, and an early view showed the old church of St. Paul looking out over the City at its feet beyond the ramparts to the green fields stretching away to the northern heights of Hampstead. Along the river, towards Westminster, a narrow ribbon of mansions and palaces was making an appearance, and here and there a church betrayed the first steps towards expansion. To check this unseemly growth Queen Elizabeth, by Proclamation, charged all persons to desist from the building of any houses within three miles of the gates of the City where no former house had been known to have been in the memory of such as were then living. In 1656 an Act was passed preventing the erection of houses within ten miles of the City; but the Act was more honoured in the breach than in the observance, for by 1700 the population of Greater London—extending to Uxbridge and Staines and Twickenham—had swollen to nearly three-quarters of a million. By 1800 the population had grown to a million, and Londoners must have needed facilities for healthful recreation. Their wants were supplied in the first place by the Royal parks—Hyde Park, St. James's Park, and Green Park—which had emerged out of the misfortunes of the monks of Westminster, forced by Henry VIII. upon the dissolution of the monasteries to surrender the greater part of their possessions. In the time of the Commonwealth Hyde Park had a narrow escape. It was sold by auction, and the most important part was sold to Anthony Dean for £9,020. John Evelyn in his Diary complained of the sordid fellow who had purchased it of the State charging a shilling for every coach and sixpence for every horse using the Park. After the Restoration the parks came again into the hands of the Sovereign, and a considerable area was appropriated by William III. to form the private grounds of Kensington Palace, much of which had happily been thrown open again as Kensington Palace Gardens. Next in importance came the commons, where the humbler folk took their recreation, and which rendered almost unnecessary the provision of other open spaces. St. Leonard's, Shoreditch, Hackney, Hornsey, Islington, Kensington, St. George's-in-the-East, St. Giles-in-the-Fields, St. Giles Without, and St. Martin's-in-the-Fields on the north side all had their commons, whilst had the girdle of commons on the south survived there would have been little need of an open-space movement for London, and the local authorities would have been spared a vast expenditure. In addition to the Royal parks and the commons there existed village greens and butts, whilst there were numerous privately-owned pleasure gardens and wells, which attracted vast and fashionable crowds. Of the gardens attached to institutions of various kinds they had happily retained as welcome lungs the grounds of the Charterhouse, of the Foundling and Chelsea Hospitals, and of the various Inns. The public playgrounds of the present day might be classified in the following order:—(*a*) Royal parks; (*b*) commons; (*c*) parks, recreation grounds, ornamental gardens, and gymnasia; (*d*) disused burial grounds; and (*e*) square gardens. These breathing-spaces were indeed a goodly heritage, for in the Metropolitan Police district they comprised an area of approximately 25,000 acres. In London proper—that was within the district controlled by the London County Council—the open spaces under the control of the local authorities amounted to 6,665 acres, or one acre of open space to every 678 inhabitants. When the Royal parks were added the area was 8,169 acres. Perhaps the most striking point in connection with the movement was the fact that practically none of the 575 open spaces dedicated to the public use and enjoyment in Greater London existed as such 100 years ago. It was true the public resorted to the commons, but in the view of the law courts they were there as trespassers, and the user for centuries of Stockwell Green for the playing of games did not suffice to save that land from falling into the hands of the building speculator. By the middle of the nineteenth century the social needs of the community began to receive the earnest attention of reformers, and the need for the provision of recreation grounds became urgent. Battersea Park was formed in 1846 upon arable common fields; Kennington Park was laid out in 1848 on the remnants of the common. The old Metropolitan Board of Works acted in 1857 to secure the preservation of Finsbury Park, and again in 1863 to acquire Southwark Park; and in the meantime the Office of Works applied the proceeds of the sale of York House for the formation of Victoria Park. Mr. Chubb proceeded to explain how the serious attacks being made on metropolitan commons by the action of lords of the various manors under Enclosure Acts led to a Parliamentary Committee being appointed, which reported against the enclosure of any more commons being allowed. In the meantime the lords of the manors discovered the existence of the Statute of Merton, passed by the Barons in 1235, which allowed the lord to enclose the common lands of his manor, provided he left sufficient to supply the needs of the freehold commoners, and relying on this statute they commenced on every hand to fence the commons in. This led to the establishment in 1865 of the Commons and Footpaths Preservation Society, and its history was a record of triumphant success under the direction of Lord Eversley. Mr. Chubb gave some very interesting details of the fights waged by the Society in regard to Hampstead Heath, Tooting Graveney Common, Wimbledon Common, Wandsworth Common, Epping Forest, and other open spaces. The general results of the movement were remarkable, for whereas in 1865 some 16,320 acres of common land existed

in the police district, only about 200 acres had become private property. The lecturer next touched on the small playgrounds for children which had been secured, and on the valuable work of the Kyrle Society in regard to disused burial grounds, and the very successful efforts of the Metropolitan Public Gardens Association, founded by the Earl of Meath. But whilst much had been done no one would assert that the work should cease. London was growing in every direction, and what was required was an intelligent anticipation of future needs in order that open spaces should be secured when the price of land was relatively low. A beginning had been made in this direction by the National Trust, which was gradually acquiring by purchase or gift hill-tops in Kent and downs and commons in Surrey. Perhaps it was not too soon to suggest the possibility of local schemes for saving scenes of natural beauty as memorials of our fallen heroes. As future open spaces he would like to see saved the banks of every stream within reach. Another open space could be secured by the realisation of the dream of the London Society, which visualised a fine embankment along the southern side of the Thames. Shooter's Hill, Woolwich, with its glorious woods and magnificent views, should be saved from the builder; a big open space should be provided between Bexley and London; and beyond Croydon, Addington Hills could be largely extended with advantage. Large reservations of this kind would not remove the necessity of providing open spaces in every growing town around London, and he looked to the Town Planning Act to assist in the preservation of such sites.

A short discussion followed.

CORRESPONDENCE.

Married Architects and Enlistment.

SIR,—My son, who is adjutant of the 23rd Battalion London Regiment, writes to me from France to say that his commanding officer is very pleased to hear that married architects have been invited to enlist in this battalion and that they may be sure of a hearty welcome should they come to France.

ERNEST NEWTON.

The Adam Manner.

SIR,—In the article "The Adam Manner" (issue of May 12) I read some hard words which no Italian artist will read without resentment.

You write:—"They go on to explain how inappropriate the repetition of classical detail may be if applied without due discrimination as to its place and position.

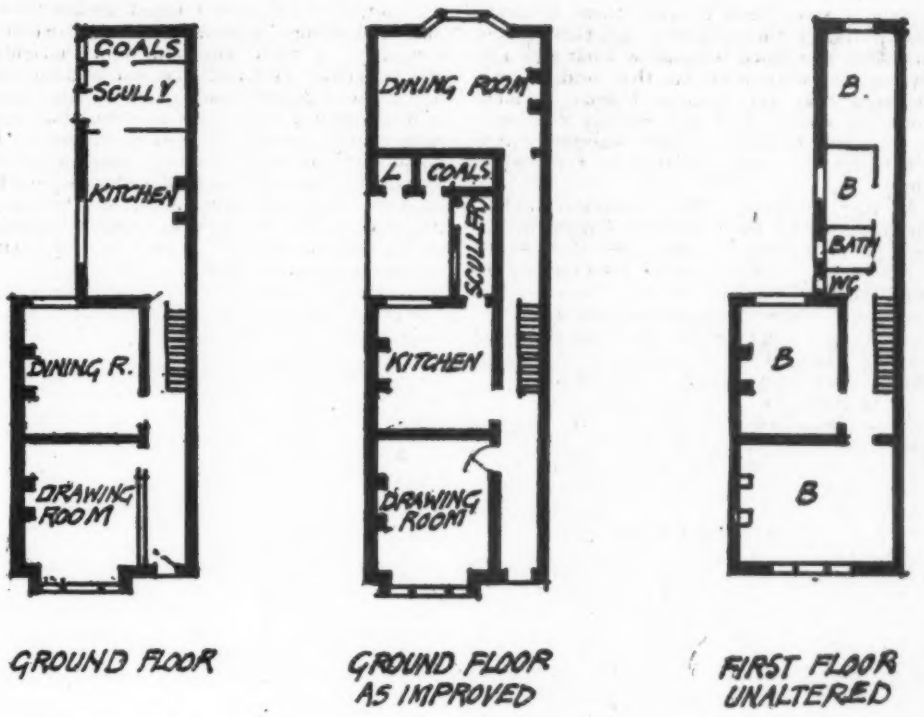
"Such absurd compositions, they added, 'took their rise in Italy under the first of their modern masters,' who unintelligently used classical detail without considering its applicability."

I think that under these words you denote the Baroque style (am I wrong ?), which, owing to the capricious movements of its lines and richness of ornaments, has never been sympathetic for the austere and frigid minds of English artists.

Allow me to ask: If the first of our masters of the eighteenth century (who is this ?) is considered unintelligent in artistic creations, which word will you use to denote all our artists of the eighteenth century, and especially Invarra, Bernardino, Vittoria, Alberti, Vanvitelli, Tagliafichi, Andrea Tirali, Ferdinando Fuga, and others, who have done artistic works as the façades of S. Cristina, Basilica di Superga, S. Francesco d'Assisi, and S. Teresa in Turin, the "Chiesa dell' Annunziata" in Naples, the great staircase of the "Palazzo Reale" in Caserta and of the "Palazzo Durazzo" in Genoa, the monument of S. Giov. and Paolo in Venice, and the enlargement of the Corsini Palace in Rome ? All these works are of Baroque style, and in their creation our artists have demonstrated a great richness of invention, and have happily solved many difficult constructional problems. You do not like this style—that is well known; but, as artists, have you the right to disparage the artists who have adopted it ? I think not!

It is through the criticism that art is developing when unfairness and acridness are banished.

A. BRANDANI.



The Rebuilding of Sackville-Street, Dublin.

SIR,—It can scarcely be other than impliedly that to evolution belongs the principle of automatic segregation upon which you formulate your theory of "Comprehensive Street Design" and its involved methods and procedure in the relative architectural designing and extension of the powers and duties of local authorities to the heights and materials of street frontages. Thus the whole conditions which you contend for arise within cities in the progress of time and their respective growths and can never have a universal and very rarely a considerable application. Evidence is borne of this not having arisen in any very wide way in Dublin by the following, which I take to be editorial remarks, in last Saturday's issue of your old-established local technical contemporary the *Irish Builder and Engineer* in connection with Sackville-street:—

"It is clear that if a list of traders and sites were properly tabulated it would be found that a considerable proportion of firms are by no means wedded to Sackville-street either by choice or necessity. . . . A further point is that many of the traders set very little store by the upper portions of their premises, which are chiefly valued only for the shop frontages. The first floors are mostly let at comparatively moderate rents to solicitors, milliners, and others. The upper floors commanded very poor rents. This shows that the traders' requirements could be largely met by the provision of shops, the upper stories forming important public buildings, or rather the elevation would be a public building with shops on the ground floor."

Thus the facts and the ideas founded on them for the future do not correspond in the minds of your contemporary and yourself. And whilst I agree as to the present with him to an extent which displaces your theory in regard to local application, I take the liberty of looking upon your difference as to the future as strongly tending to show that the proper, which indeed I believe is also, broadly speaking, the inevitable, course is the return as regards Sackville-street and its businesses to be an almost complete return to the *status quo*.

But even this will be very difficult of achievement unless the financial benefits to be given by the State will be on the lavish lines which the circumstances and justice demand, and not upon the parsimonious principles for which the Government seem to be steering. If London through its institutional and Press organs of public opinion would accept this position it would no doubt greatly assist in untying the purse-strings of the Treasury.

If this financial issue didn't throw everything else into the background I'd like to discuss your views as to Nelson's Pillar.

A SUBURBAN DUBLINER.

The Terrace Villa.

SIR,—Just now, when a general revision of our ideas with regard to many subjects is being effected, it may not be amiss to consider whether in the case of the suburban villa of the commonest type the space available is used to the best possible advantage, and whether the rooms are so disposed as to catch the greatest amount of daylight. One would say that the existing type had probably been designed by some wealthy architect who would never have to live in one himself. I happen to live in such a one, which is better designed than most I have come across. In my experience, however, the most objectionable feature of this kind of house is the bay of brickwork at the rear. One of my principal sitting-rooms looks on to gloomy brick-walls, and when my neighbour lights his kitchen fire the smoke blows into my rooms, and *vice versâ*. By a rearrangement of the ground-floor plan, as shown, these inconveniences would be avoided, and it would also be possible to have in a small house a good-sized room looking direct on to the garden, and free, moreover, from the sometimes unwelcome observation of one's neighbours. Even the smallest garden judiciously planned could become a pleasing adjunct to this room and independent of any adjacent ugliness.

A HOUSEHOLDER.

FIFTY YEARS AGO.

Revolving Venetian Shutters.

AN arrangement of iron shutters has been patented by Messrs. Bunnett & Co., which affords thorough ventilation and shade, combined with the perfect security of a revolving iron shutter. The laths are made in iron and wood, flat, rounded, or curvilinear, as required; but, instead of the hinges being fastened by rivets or screws on the back of laths, they form continuous bands from the roller, on which the shutter coils to the bottom, and by which the shutter is made to lower. The top edge of each lath is connected at intervals by means of flaps to the continuous bands of hinges, leaving the lower edge of the lath free to be raised or lowered as may be required. Each lath is fastened to the one immediately above it by means of points working on a centre fitted to the end of each lath at its lower edge. By an easy contrivance the grooves in which the shutters ascend and descend are thrown open, and allow the shutter to take the shape of a venetian blind.

[*** From the *Builder* of June 16, 1866.—ED.]

GENERAL NEWS.

Town Planning in South Birmingham.

Now that the Town-Planning Committee of the Birmingham City Council have completed their tentative proposals for planning the South Birmingham area, notice has been given that the draft map showing the proposals can be inspected at the Council House by owners of the land in the area or their representatives.

Church, Broadstairs.

The consecration of the new building, Christ Church, Broadstairs, was performed recently. The church accommodates over 300 persons, and has a vestry and parish-room attached. The architect of the church is Mr. A. Alban H. Scott, of Lincoln's Inn, London. The building has been constructed by Mr. J. T. May and the electric lighting installed by Mr. Vernon Hill.

The National Gallery.

Sir Charles Holroyd has completed ten years' service as Director of the National Gallery, to which he was appointed in 1906 for five years. At that time the Directorship had been vacant since the resignation of Sir Edward Poynter some eighteen months earlier. In June, 1911, he was reappointed Director for a second term of five years. It is stated that he is in bad health and that in consequence he is unlikely to seek a further extension of his Directorship.

Lord d'Abernon, presiding at the annual meeting of the National Arts Collection Fund, said that he had long been impressed by the fact that while the National Gallery was splendidly representative of all the great foreign schools, particularly of the Dutch, the Flemish, and the Italian, our representatives of English schools were in some departments singularly defective. The earlier periods of English painting were almost unrepresented.

The Italian War Exhibition.

Thursday, June 22, is the date now arranged for the opening of the exhibition of war pictures and cartoons by Italian artists at the Leicester Galleries. In addition to the series of paintings of the Italian war zone by the artist, Ludovico Pogliaghi, who went to the Alps with the direct authority of the Government, there will be many other features. For the first time in England will be shown a collection of original drawings by Galantara (sometimes known as Rata Langa), whose influence as a cartoonist, it is said, is so widespread in Italy that he has for long been recognised as a strong political force and a valuable asset to the cause of the Allies. Another artist whose work will arouse enthusiasm among the discriminating is Sacchetti. Many of the leading Italian artists have made drawings specially for this exhibition. There is, for instance, a series of paintings dealing with the tragedy of Nurse Cavell by Corbella, one of the most popular artists in Rome.

Liverpool Architectural Society.

An outing was enjoyed by members of the Liverpool Architectural Society on June 3, when by the invitation of Mr. T. T. Rees, the architect of the buildings, they paid a visit to the North Wales sanatorium in Denbighshire. The party was headed by Mr. Percy Hinde, the President of the Society, and Mr. Richard Holt, the Hon. Secretary, and included the Mayor of Birkenhead (Mr. James Merritt), the contractor for the buildings, and the Mayor of Wallasey (Mr. Sidney Dawson). The visitors found the new institution, which is to form part of Wales's memorial to the late King Edward VII., in a state approaching completion. Accommodation is provided for 220 patients, men, women, and children, and later this will be extended to provide for 250 persons. Bacteriological and disinfecting facilities are provided, and one block will be set apart for cases requiring surgical treatment. The completed scheme will cost about £40,000. Attached to the institution is a farm of about 250 acres, presented by Mr. D. S. Davies, of Denbigh, and a part of the scheme is the rebuilding of the farm buildings on model lines.

1st London Engineer Volunteer Corps.

The 1st London Engineer Volunteer Corps has been formed by the amalgamation of the E.I.V.E. Corps with the 4th Battalion Central London Regiment (Architects' Corps) and the L.C.C. Training Corps. The three corps have now, in accordance with the wish of General Sir O'Moore Creagh, become an engineer corps; with the exception of the Post Office Engineering Volunteer Training Corps (which is composed of civil servants), it is the only engineering corps in the metropolitan area. Full information with regard to the above corps can be obtained from the Adjutant, Chester House, Eccleston-place, Victoria, S.W.

Organisation of British Engineering Industry.

The following resolutions were carried at the general meeting of the Council for the Organisation of British Engineering Industry (Manufacturing Engineering Concerns Section) on June 6:—

"(1) That this meeting approves the steps taken to organise British Engineering Industry by the Council appointed on December 6, 1915.

(2) That this meeting approves the formation of an Association on the lines advocated in the Memorandum circulated, with power to negotiate, and if advisable to amalgamate or combine with existing or projected Associations; and this meeting pledges itself to support such an organisation.

(3) That those firms who by signing the card have promised their adhesion and support to the organisation be asked to subscribe to the funds of the new Association, and to make forthwith a minimum payment of £5 on account of their first year's subscription towards preliminary expenses.

(4) That the existing Committee be empowered to give effect to the resolutions passed at this meeting."

Norwich Union Fire Insurance Society, Ltd.

In presenting the 118th Report of the Norwich Union Fire Insurance Society, Ltd., to the annual general meeting, held at the Head Office, Surrey-street, Norwich, on the 6th inst., the Chairman (Major Cubitt) reported satisfactory results in all departments. The premium income from the various branches of business reached a total of £1,798,280. In the Fire Department, in which the premiums amounted to £1,188,766, the losses paid and outstanding were £600,663, and after payment of all expenses and commission and strengthening the reserve by the addition of £75,688 there remained the sum of £108,046 to transfer to the profit and loss account. The accident premium income, standing at £467,473 showed a substantial increase, whilst the claims paid were £244,031. In the profit and loss account the first item is £168,120, being the balance brought forward from last year; there is also to its credit £99,794 interest on investments and £161,519 trading profit, which, with transfer fees, £31, makes a total of £429,465. After making the usual payments, the directors were enabled to set on one side an Investment Reserve and War Contingency Fund of £200,000, and also to recommend an increase in the dividend of 3s. per share, making the amount payable for the year 1915 35s. per share less income-tax. The balance sheet shows the total assets to be £3,045,472.

Excavations in the Island of Tiree.

Under the direction of a member of the Antiquarian Society of Scotland, excavations are now being conducted at the underground dwellings recently discovered at Kilkenneth, in the island of Tiree.

Wargrave Church.

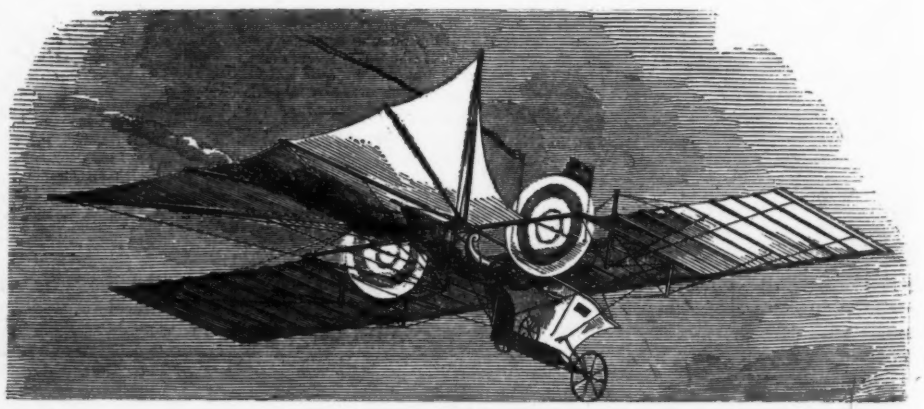
Wargrave Church, which was burnt down by suffragettes on Whit-Monday, 1914, has been rebuilt at a cost of over £13,000. In the course of the rebuilding various architectural discoveries have been made, including fragments of a thirteenth-century doorway.

The Whistler Memorial.

Inquiries having been made regarding the memorial to J. McN. Whistler by M. Auguste Rodin, organised by the International Society of Sculptors, Painters, and Gravers, the Committee of the memorial state that in his last letter, dated April 13, M. Rodin said that the memorial was almost finished when the war broke out, since when he had not worked at it. It would be the first thing he would do as soon as he had a little more time. M. Rodin added that he could not give a reply to the subscribers at the moment, but that six months after the end of the war the monument should be ready for London, at least six months being required for casting the bronze. The Committee also state that the entire sum subscribed for the memorial has been collected, invested, and placed in the hands of trustees.

The Aerial Wagon.

A correspondent has called our attention to illustrations in our issue of April 1, 1843, in which we described an inventor's proposal for a "steam-driven air carriage." The illustrations which we then gave, one of which we reproduce, bear a considerable similarity to the modern aeroplane. The ambition to fly has been one which has inspired the efforts of inventors for many centuries, but it is probable that most of us even twenty years ago would have doubted its ever being successfully achieved. During the last thirty years greater progress has been made in practical scientific discovery than was ever made in any like period of the world's history. The submarine was foreshadowed by Jules Verne in "Twenty Thousand Leagues under the Sea," and we have in the present war seen what its capabilities for destruction are. Wireless telegraphy, the discoveries of X-rays and radium would have seemed to former ages to appertain to black magic, nor can we say that we may not live to see a future in which all these things have become commonplace in comparison with the new wonders which scientific research may reveal to us. Those who have experimented with flying in the past have generally based their ideas on the navigable balloon rather than the "heavier-than-air machine," shown in our illustration, which only reached actual accomplishment when the discovery and manufacture of petrol gave us a new means of producing energy, which has proved infinitely more manageable than steam. The inventor of the aeronautic contrivance illustrated was a Mr. Henson.



The Aerial Steam Carriage.

(From the *Builder*, April 1, 1843.)

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ILLUSTRATIONS.

Leadenhall-Street Premises.

MESSRS. TREHEARNE & NORMAN'S design shows the proposed treatment for the major portion of the widening of Leadenhall-street, which has already been arranged. The frontage treated is for a length of about 195 ft. Unfortunately it has not yet been possible to commence building operations owing to the war.

The design is for a Portland stone front with metal casements, and when carried out will probably be one of the largest conceptions dealt with in the City of London in recent years.

The Churches of the Later English Renaissance.

OUR illustrations are of two churches by Nicholas Hawksmoor—St. George, Bloomsbury-square, illustrated by scale drawings made by Mr. Fitzroy Doll, F.R.I.B.A., under whose supervision the church was altered and decorated in 1897, and St. George-in-the-East. Both are referred to in our article on page 433.

The North-Western Polytechnic.

THE whole of our inset illustrations for June 2 were given up to this important scheme. Tenders were delivered for the erection of the building within a few weeks of the commencement of the war, that of Messrs. Dove Brothers being the lowest; and, moreover, the tender was of an amount not exceeding the margin allowed upon the estimate.

All question of proceeding with the building when war broke out was shelved, and the matter now stands indefinitely postponed.

The illustrations are taken from the working drawings, which, we understand, have been prepared so as to ensure rapid progress when work is started. Considerable forethought has been taken down to the smallest detail, so that alteration during the progress of the building or variation of any kind will be unnecessary.

The building generally will be of mixed colour brick facings upon a Portland stone base, with the smallest "peggies" of rough green Westmorland slates as roof.

Windows are steel, floors fire-resisting, with special precautions to make them as sound-proof as possible. Walls are glazed in staircases and passages. Ventilation is by suction into large flues over the corridor ceilings, the pull being provided by the boiler flues. The accommodation is upon a very much larger scale than was contemplated when the scheme was propounded. Other schools have been incorporated, a large assembly hall added, and very considerable accommodation added for recreative purposes.

The advice and guidance as to the arrangement of the building given by the various authorities concerned have been extraordinarily helpful, and the scheme as it now stands embodies the very best expert opinion, and is believed to be one which will receive the approval of all those interested in the promotion of polytechnic work.

The design was chosen in competition, and, though the building has been considerably enlarged, it does not materially differ from the design originally submitted. The architect is Mr. Arnold Mitchell, of 17, Hanover-square, W.

"Mancroft Towers," Suffolk.

THIS building, the residence of Colonel Philip Back, was an attempt to plan and design a house in the style of the old red brick Tudor manor houses to be found in this neighbourhood. A feature in the plan is the long gallery extending from the five-light window over the porch, seen in the view, quite through the building, and terminating at a window in the tower. The higher bay and central windows seen light the hall.

Situated on a slight spur and commanding extensive views over the low-lying marsh lands to the south, west, and north, the tower naturally suggested itself, and now it is built becomes a landmark. Oulton Broad lies handily to the south. The whole of the exterior is in red brickwork except the roofs, which are covered with tiles, and the windows are all lead glazed. Mr. Young, of Norwich, was the general contractor. The building was designed by Mr. George J. Skipper, F.R.I.B.A., architect, Norwich, who also is the author of the drawing we reproduce.

Blackford Church, Somerset.

IT is proposed to erect a screen and rood loft gallery at this church, which will be the gift of the Rev. C. F. Haines, vicar, and it will probably be installed within the next two or three years, the lower portion being undertaken shortly. The work will be executed in selected oak by Messrs. R. L. Boulton & Sons, of Cheltenham, from designs and drawings by Mr. F. Bligh Bond, F.R.I.B.A., architect, Glastonbury.

Ulm Cathedral.

WE illustrate the west front of Ulm Cathedral, which has been completed in accordance with a design made in the Middle Ages. Ulm has the distinction of possessing the highest tower in the world (excepting the Eiffel Tower), which exceeds 500 ft. in height.

A Baroque Mirror.

THIS illustration shows an interesting piece of Baroque furniture from an Austrian Church.

MEETINGS.

MONDAY, JUNE 19.

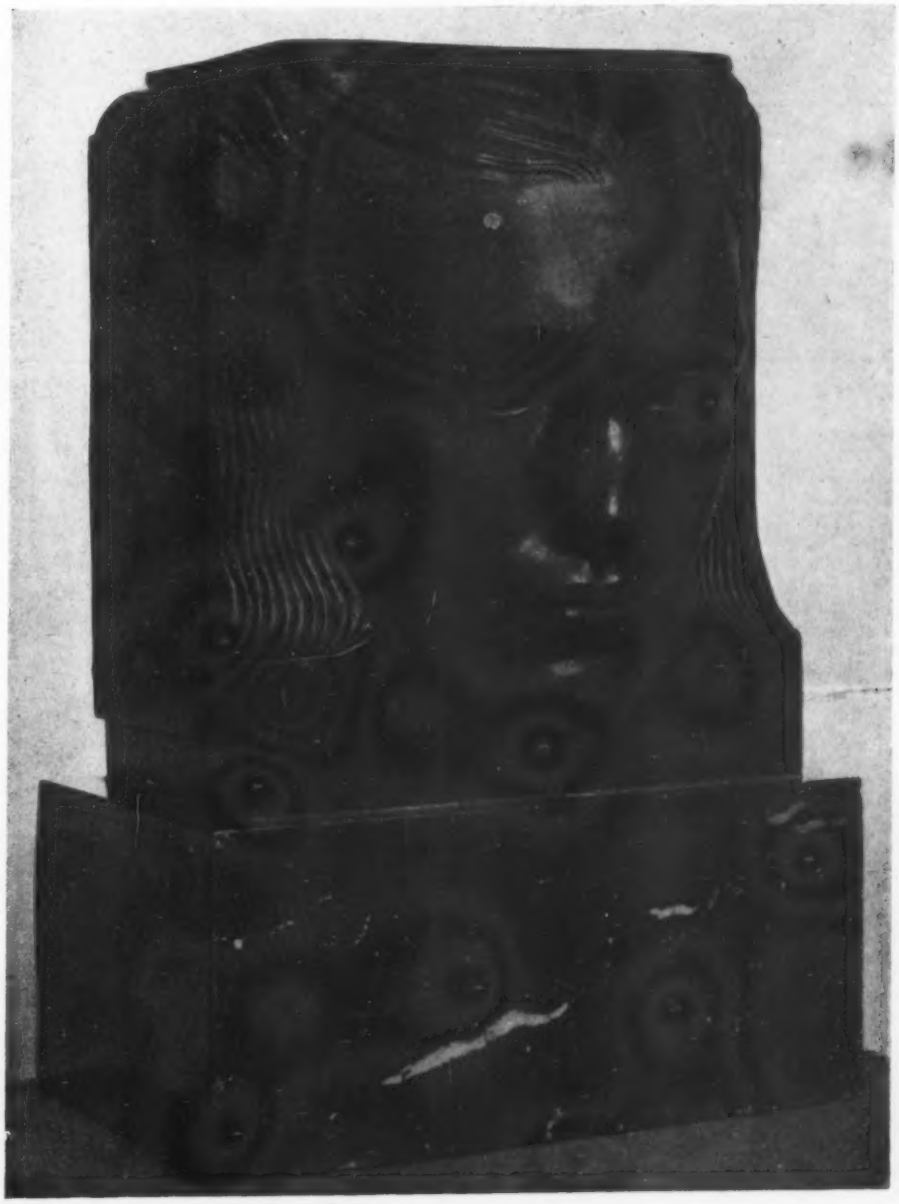
Royal Institute of British Architects.—Presentation of the Royal Gold Medal. 3 p.m.

London Society.—Mr. Arthur Crow, F.R.I.B.A., on "The Port of London: Past, Present, and Future." 5 p.m.

MASK IN BLACK MARBLE.

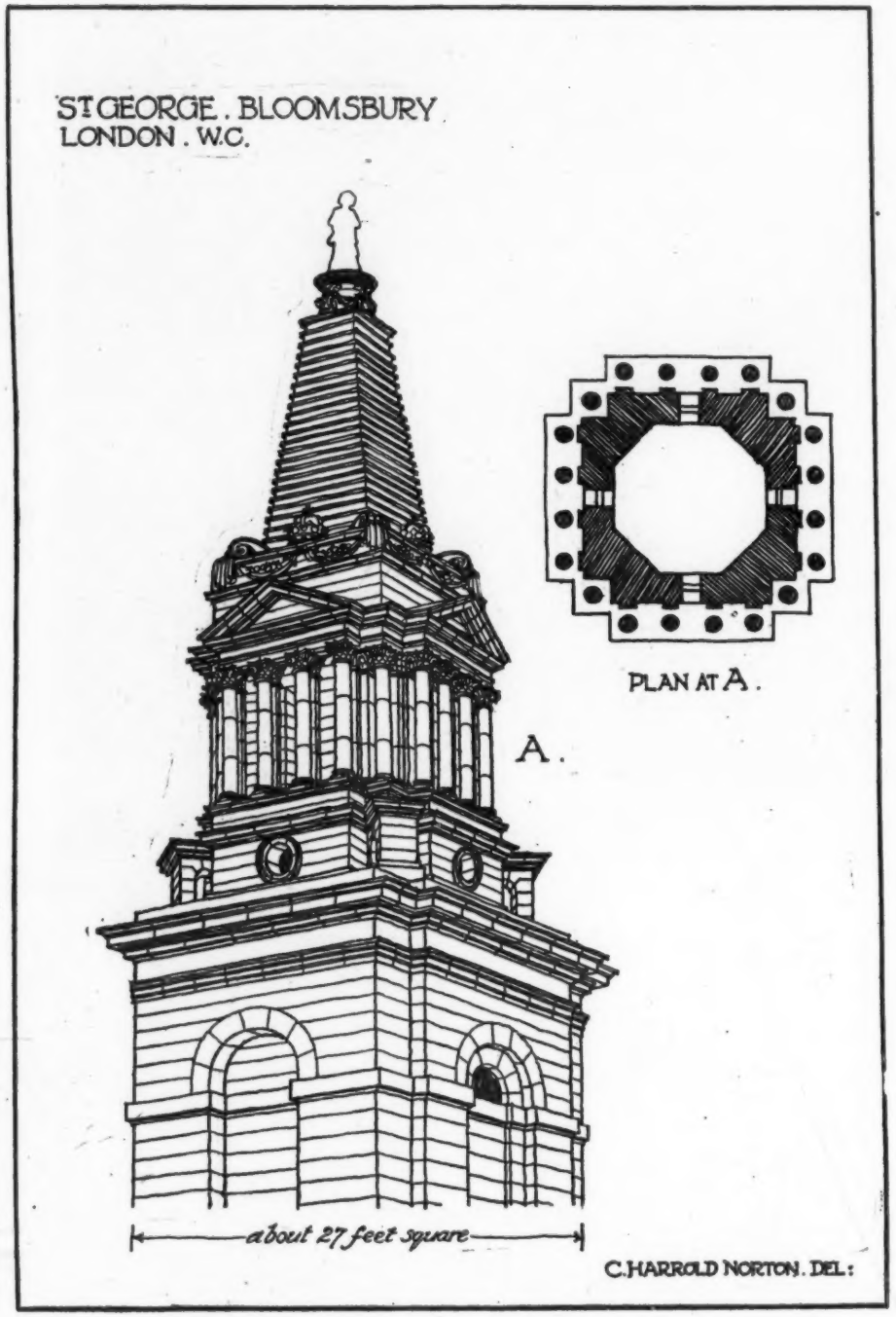
THIS mask in Belgian black marble on dark red marble base was carved direct by me without the aid of a model of any kind, and not in the usual manner by "pointing" from a plaster cast. The material is extremely treacherous and as hard as granite; in carving, pieces pluck out without warning.

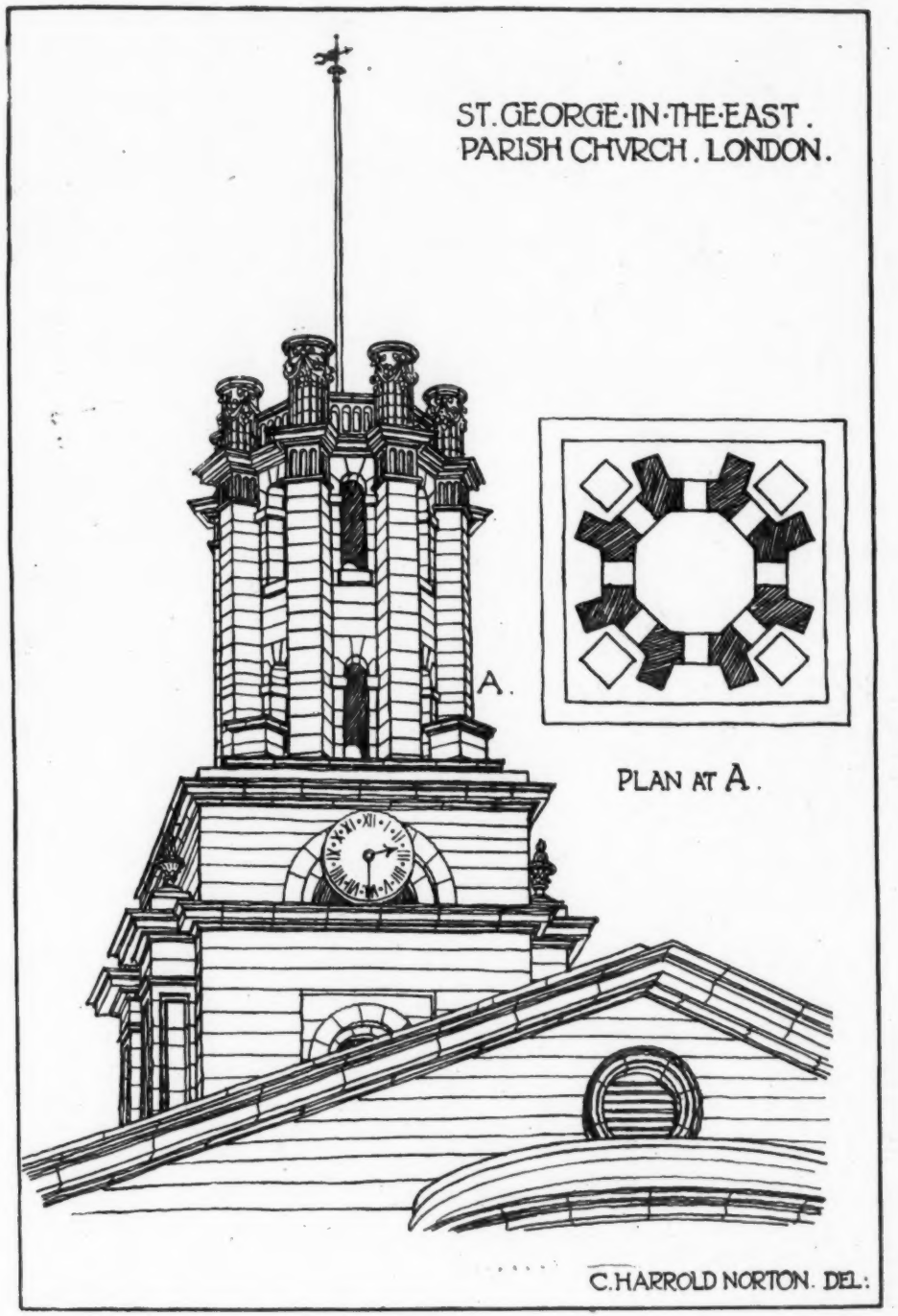
The material takes a good polish on account of its hardness. RICHARD GARBE.



Mask in Black Marble.

Mr. Richard Garbe, Sculptor.





The London Churches of Wren and Later Architects of the Renaissance. (*See page* 433.)

Baroque Mirror from a Church at Gleink, Austria. (*See page* 437.)

THE DESIGN AND CONSTRUCTION OF COW-HOUSES.

BY J. M. W. HALLEY, F.R.I.B.A.

IN an admirable pamphlet published by the Board of Agriculture and Fisheries on the subject of cow-houses it is written that "it is comparatively easy to provide new buildings which will meet all requirements at a moderate cost."

Cost, however, has very little to do with "requirements" beyond the very elementary and exiguous one of sound construction. Once you have secured this—and without it all one's efforts are wasted—the rest is a matter of careful thought.

At the outset it may be as well to say that sound construction is not synonymous with costly construction. In its kind a wooden construction may be as sound as one of brick or stone. It will be obvious to anyone that "sweetness and light," qualities that should appertain very closely to cow-houses, do not cost a great deal of money. The pamphlet to which I have referred above states that "it is much more difficult to alter an existing building so that it can be made as suitable as a new one." This is true; but if an old cow-stable is sufficiently wide, if it takes two rows of cows, it is very easily susceptible of remodelling. What is rather difficult to change is the relative position of buildings, the relation between the cow-house, root and chaff house, mixing, milk-room, dung pit and urine tank (the latter, usually being conspicuous by its absence, does not offer much difficulty). Each farm offers a different problem and requires a different solution, so that it is impossible to lay down laws to govern every contingency. It will be of most use if I treat merely of the remodelling of the cow-house itself without treating of the subsidiary buildings. But first let me speak of a new building, designed expressly to house cows in the most economical and scientific way.

The most durable kind of wall for any building is one of stone or brick. In Scotland a stone wall of about 21 in. thick would probably be cheaper than a brick one, but in most parts of England brick is the cheaper material. The usual English 9-in. brick wall, however, is neither good for man nor beast, and should never be used. It is very porous and is always damp. It is much better, and adds very little to the cost, to build a wall with a cavity. The usual practice (when a cavity wall is used) is to build two 4½-in. walls with a space between of 2 in. A wall built in this manner is drier and warmer than a 14-in. solid brick wall. To increase further the efficiency of this hollow wall some time ago I built a cow-stable with a 4-in. cavity; the larger body of air acts as an excellent insulator, preventing the heat from passing out or the wet and cold from passing in. For a small building I should not have the slightest hesitation in using a patent brick 4½ in. thick for the outside walls. It will be seen from the diagram (Fig. 1) that for a considerable part of its area it is hollow, and consequently makes a warm and a dry wall. The joints between the bricks are, of course, a source of weakness, but this can be remedied by covering the outside with a thin coating of cement and sand. Indeed in a sheltered situation I should be content to treat the walls with a coating of tar, a covering easily renewable by the farmer himself at an insignificant cost.

The use of this brick, it may be said in passing, offers a solution of the problem of the housing of the labouring man, for with it it is possible to build for £150 a cottage containing three bedrooms, living-room, scullery, and earth closet.

A wall—it matters not of what material it is built—must have a damp-proof course near its —base, some 6 in. above the ground, to prevent the damp from rising into the wall. This may consist of two courses of slate bedded in cement, or any one of the numerous bituminous preparations in the form of sheets which can be cut to any size and laid easily and cheaply.

The common form of roof is constructed of a series of heavy principals placed about 10 ft. apart, on which rest purlins, which again carry

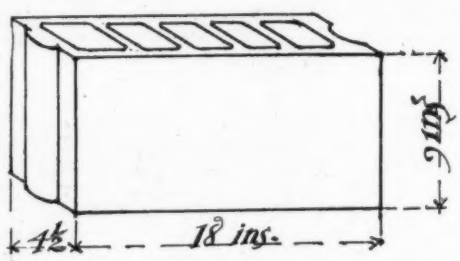


Fig. 1.

the rafters. Now a roof of this sort exercises a considerable pressure on the walls where each principal rests, and consequently a buttress is required under each—a method much more costly than building a hollow wall without buttresses. It is quite possible to build a roof in a simple manner, in such a way that its weight is distributed between the walls and internal wooden posts. These posts, besides carrying a share of the weight of the roof, can be arranged to come in the cows' standing-place, and in the absence of stall divisions helps to keep the cows straight in their places. They can be spaced 6 ft., 9 ft., or 12 ft. apart, accommodating two, three, or four cows. The section of cow-houses (Figs. 2 and 3) shows details of this sort of roof.

The cheapest form of roof covering is corrugated galvanised-iron. It is unnecessary when using this material to make the slope of the roof as steep as when employing tiles or slates, as it can be laid as flat as 20 deg. from the horizontal, whereas tiles should not be laid at a less slope than 45 deg., and slates at a pitch not less than 30 deg. (Fig. 3). With proper attention an iron roof can be made to last forty years. The first care is to obtain good material, and then, after the first rains have washed out the acid used in the galvanising process, to give it two coats of silica graphite paint. This paint will last for ten years.

The inside of an iron roof must be boarded to keep the building warm. Skylights can easily be introduced into this kind of roof without much expense, as well as provision made for ventilation along the ridge as shown on the diagram (Fig. 2). At the same time, iron does not make nearly such a good roof as slates, which, if well chosen and carefully laid, are practically indestructible. As it is more expensive to introduce skylights into a slate roof than into an iron one, it is best to leave them out and to provide instead one or two wells with glass roofs. The wells also act as very efficient ventilators, the sides being composed of louvres, the position of which can be adjusted to suit the weather. A glance at the diagram (Fig. 3) will explain this point. Fig. 4 shows a detail of this ventilator. The louvres are pivoted on the axis of their upper edges and can be opened or shut as the projecting spurs on the centre pillar are turned. Whether the roof is covered with iron or slates or tiles, it should never be left without an eaves gutter. Its omission, by allowing the rain from the roof to run down the walls, keeps them damp, just as much as the lack of a dampcourse does. Further protection can be given by projecting the eaves beyond the walls.

Light and ventilation are the great desiderata in a cow-house. For many reasons it is preferable in a cow-house with double stalls to have a central feeding passage. One reason is this, that with fairly low eaves it is possible to obtain plenty of light and air through the low walls. This could not be done if the cows were placed facing the outside walls, unless in the exceptional case when two feeding passages are introduced between the heads of the cows and outside walls. There is no saving of labour if one dunging passage takes gutters from both sides, over one feeding passage and two dunging passages. The saving in reality is with the latter system in a properly-considered plan.

Nothing contributes to cleanliness in the cow-house so much as light, and the minimum of 2 sq. ft. per cow can with advantage be increased. There should be no difficulty in doing this, for windows can be ranged along both sides and at one end. The common form of cow-house window has not much to commend it. I refer to the type only the upper half of which is glass, the lower part being a hit-and-miss ventilation. It is preferable to glaze the entire area, pivoting the

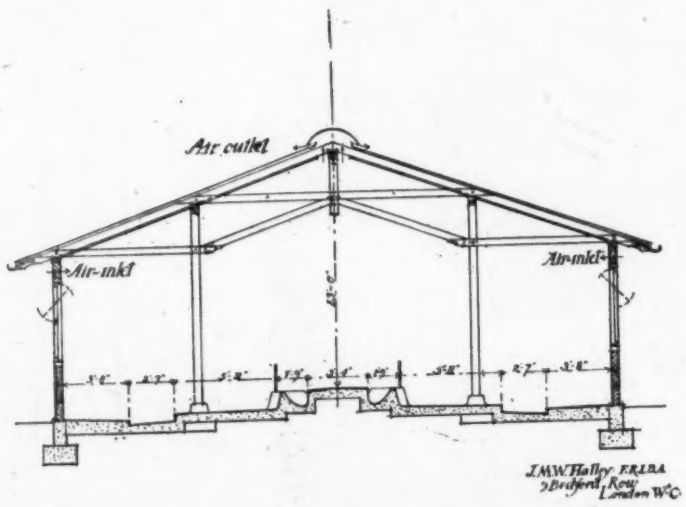


Fig. 2.

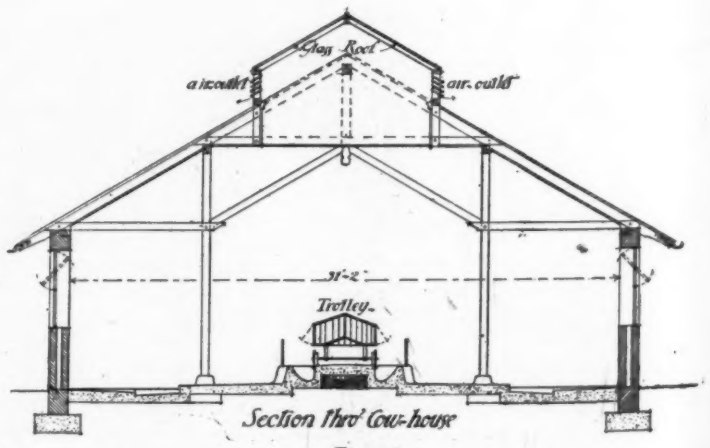


Fig. 3.

upper half horizontally. A simple fastener allows it to be opened very easily by the cowman. These windows may be made of wood or iron. A small opening should always be left under the sill to allow condensed moisture to escape. In addition to the windows small square openings should be left in the brickwork, close under the eaves, and fitted with a simple wooden sliding shutter on the inside to regulate the inflow of fresh air. I have already spoken of lighting and ventilation in the roof, and it is unnecessary to mention them again except to say that the outlets for foul air in the roof should not be less than twice the area of the inlets. It is well to err on the side of generosity. The minimum given in the pamphlet on the construction of cow-houses mentioned above is 40 sq. in. per cow for the inlets.

The whole point about housing milch-cows for half the year is to prevent the unnecessary consumption of food merely to keep up the temperature of the cows—that is to say, for purposes other than that of producing milk. It may therefore prove false economy to keep the cow-house too freely ventilated if it be at the expense of warmth. But there is always a golden mean, and in a properly-constructed building with boarded roof and hollow walls it should be possible to prevent the temperature falling below 50 deg. Fahr., while admitting a plentiful supply of fresh air. Some experiments undertaken by the Highland and Agricultural Society during the winter of 1908–9 showed that a cow-house kept at 60 deg. Fahr. contains three times as much carbon dioxide as a freely-ventilated building kept under 50 deg. Fahr. Further, and what is of equal importance, the production of milk may be as great in the one case as the other, while the health of the animals will be better in the latter case.*

It is essential that the floors of a cow-house should be damp-proof—that is to say, they should be so constructed that the damp from the ground cannot rise through them. Made thus they will also be impervious to all liquids brought into contact with their surface, which will drain off into channels constructed for the purpose. Cement concrete makes the best and cheapest floor, and it is easily susceptible of being moulded into the shapes required for standing-space, mangers, gutters, etc.

It may be said in passing that the floor, as divided on the base which the diagrams illustrate (Figs. 2, 3, and 5), do not pretend to be able to accommodate all kinds and conditions of cattle. It will be found, however, to provide ample room for Shorthorns. The principle underlying the design of the floor remains the same for all classes of cows. The space allowed for each cow in this case is 3 ft. 1 in. by 5 ft. 11 in. long, exclusive of the manger.

In this floor two features distinguish it from the usual type—(*a*) the width of the dunging gutter, (*b*) the manger (Fig. 5). The former is 2 ft. 7 in. wide with a fall of $1\frac{3}{4}$ in. to its outer side, whilst the latter is continuous, serving for fodder and water, and the feeding passage is raised to the level of its top. The extra width of the dunging gutter and its sharp fall outwards are both dictated by the necessity of getting the liquid part of the dung to a tank in the shortest space of time. The fæces will fall into the gutter at the cow's heel and remain there, but the urine wherever it falls will be led away to the drain as quickly as possible. With a gutter of this width and shape all liquids will quickly find their way to its outer corner and so to the drain, for it would be made to slope longitudinally (1-40) as well as towards the back. A very little slope is given to the cows' standing-place and one slightly greater is given to the dunging passage, so that no liquid would be likely to lie where it was not desired. It would thus tend to dryness and would quickly dry after being swilled down with water.

Before leaving the subject of floors it will be as well to consider the material of which they should be made. For the concrete it is

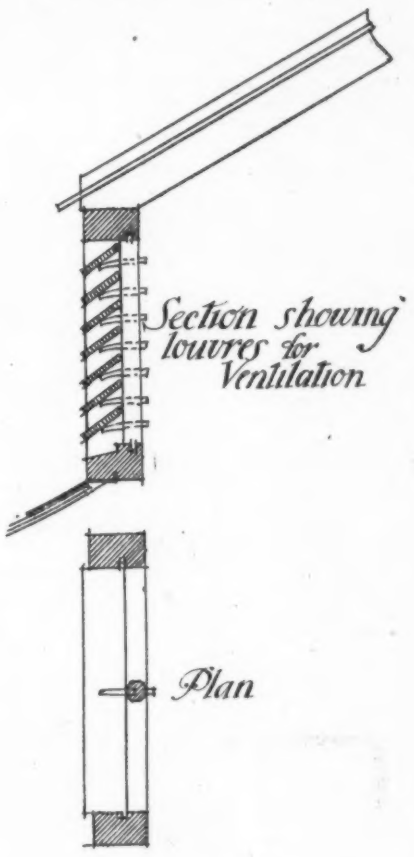


Fig. 4.

preferable to use granite, gravel, or hard limestone, or broken bricks, and no piece should be larger than a hen's egg. Granite, of course, makes the best floor, but, while it is essential in a horse-stable, it is not so necessary for a cow-house, so that it is unnecessary to go to this expense if a cheaper material can be obtained. The concrete may consist of one part of cement, three parts of sand, with as much as five parts of broken stones, and should be laid on ground that has been well rammed about 5 in. thick and formed roughly to the contours required. When this is hard, a finishing coat of cement and sand should be laid and finished with a smooth surface. It is unnecessary to form V-grooves in the floor of the stalls, or indeed in any part of a cow-house, as they are difficult to keep clean, and one of the chief ideas governing the design of these floors is to make them so that they can be cleaned easily with a hose. It will be found that a cement floor is not slippery when it is kept clean.

A counsel of perfection requires that each cow should have a separate manger in order that she can be fed according to her powers of producing milk—each cow having practically a different menu—and also that she should have a water-trough so that she may drink when she pleases. But, however desirable these niceties may appear as ideals, they are costly in the first instance. Besides, a scientific and careful dairyman will grade up his cows till they are fairly similar in output, and so entitled to the same amount of fodder, and even with a continuous manger it is an easy matter to give a favourite cow a little extra cake.

Water is introduced into the cow-house in order to avoid sending the inhabitants out in the depth of winter to drink in a cold pond. In this way it protects the cows from the risks of chills, and incidentally it increases the milk yield.

It is unnecessary that the cow should be able to satisfy her caprice of drinking when she will; therefore a separate water-trough is really not necessary. The manger makes an excellent one. Water should be laid on to it at one end and an outlet should be provided at the other. With this method the labour involved in watering cattle is eliminated, and it is no trouble to clean the manger. It is well to be able to flood the manger quickly, so that the last cow can drink at the same time as the first. A 2-in. supply should therefore be used, with a tap of the same size actuated by a lever. The manger should be given a fall of about 1 in 200, or even less, to prevent the water running off too quickly. Several considerations dictate the shape of the manger, which, it will be observed, is different from those in general use. It will be obvious that a given amount of water will rise much higher in it than in one of semicircular section. As the water is running away all the time a considerable saving of water is effected. Again, the cow has greater control of her food using such a manger, being able to push it with her nose into the corner, where it has no escape but down her throat. The feeding passage should be kept level with the top of the manger, so that the latter can be filled by gravity if a properly-designed trolley is used. On the diagram (Fig. 3) I have shown a trolley such as has been evolved for the Manor Farm, Wantage. It will be seen from the section that the sides are hinged at the top so that they can be opened by releasing a fastener, when the roots fall out into the mangers on either sides. A division down the middle and a bottom which slopes up to this division will cause the trolley to empty itself with a minimum of labour. A railway the metals of which stand above the level of the feeding passage is objectionable in many ways; it is difficult to keep clean, and the rails form harbours for dirt; it is also a stumbling-block for unwary steps.

By raising the passage as I have suggested above it is possible to form a railway free of objections. It consists of an ⅂ iron (Fig. 5, *C*) on each side of the passage, and level with it. It thus acts as a rail and as a strong binder to the concrete. It will be observed that the wheels of the trolleys have their flanges on the outside instead of inside.

The apparatus for tying up the cows should be as simple as possible (Figs. 5 and 6). For

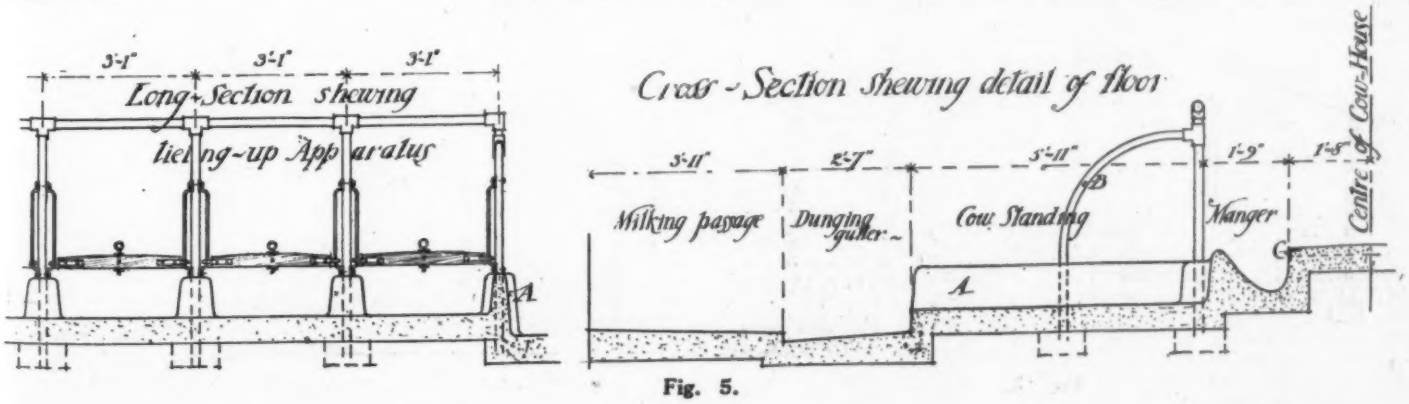


Fig. 5.

* "Journal of the Board of Agriculture," October, 19 9, pp. 550, 552.

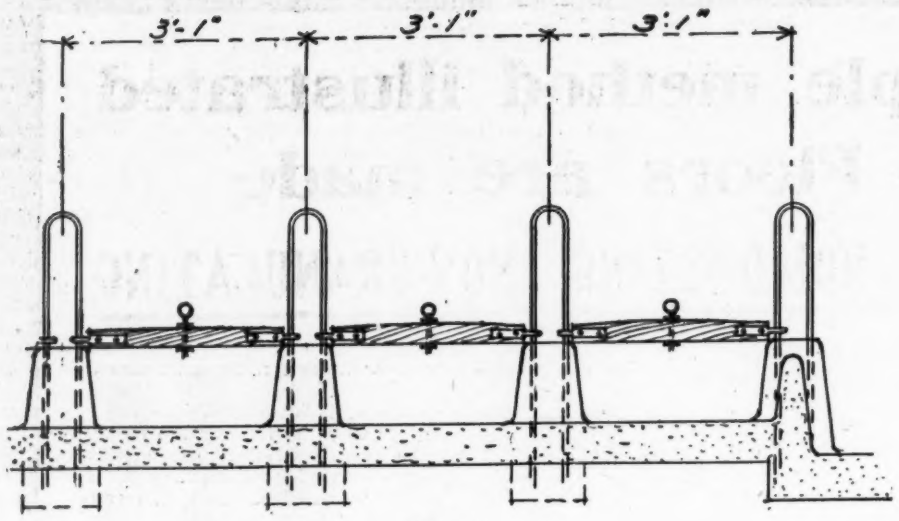


Fig. 6.

cleanliness and health iron is a better material than wood, and recently several ingenious arrangements of tubular iron have been put on the market for this purpose. In the illustrations (Figs. 5 and 6) I have shown two arrangements which are both cheaper than any of those on the market (the simpler, Fig. 6, indeed costing no more than 10s. per cow). As a rule cows rise when feeding begins, and in their eagerness are liable to push towards the passage. At this time, if they void any excrement it falls on the floor of the stall and is likely to soil the cow later if it is not at once cleared away. A tying-up apparatus therefore should be contrived, if possible, to prevent this forward movement, while giving the animal freedom to move its head up and down and to a limited extent sideways. Both of these fittings fulfil these requirements. In principle they are the same. Each has a tethering-bar of ash-wood with a swivel-ring in the middle, to which the cow is tied by a rope. The tethering-bar can be raised by a movement of the cow's head some 18 in. above the top of the manger (a height sufficient to bring the neck of the animal in a straight line with its back), but that is its only movement—up and down. The diagrams explain themselves better than words, so that it is unnecessary to say much more on this head beyond observing that it is very necessary to build the iron bars well into the concrete. At each end of the cows' standing-place it is advisable to form a low wall (as high as the manger) (Fig. 5, *A*) to prevent the litter falling on to the floor of the cross passage, and to keep the end cow in her place an iron bar, in the form of a bow, is inserted in the concrete (Fig. 5, *B*).

In attempting the metamorphosis of an old barn or cow-house into a scientific building, it may be necessary to adopt some different arrangement of the cows, but if the width is sufficient the method advocated here will be found economical in working. As a rule one of the first operations will be the insertion of a damp-proof course (most old buildings do not possess one). An opening is made in the wall about 6 in. above the ground, a few inches high by some 2 ft. or 3 ft. long, into which are laid two courses of slate laid in cement, in such a manner that the upper slate covers the points of the lower. The cavity is then filled in and another slit is cut in which slates are bedded as before and so on. An eaves gutter will most likely be wanted in an old building, and more windows will require to be knocked through the walls. But the whole idea should be to endeavour as far as possible to make the altered building possess the amenities I have recommended for a new one.

A cow-house in itself is only a comparatively small part of a dairy farm, and I have endeavoured to show (Fig. 7) the relationship of some of its parts, as the dung-pit, urine tank, calf-house, etc. The diagram shows these. Over the milk-room a tank should be placed with a sufficient capacity for a day's consumption—ten gallons per cow in addition to the water required for the milk cooler. It is preferable to fill this tank by gravity, but if that is impossible, then recourse must be had to pumping. In this larger plan I have arranged a loft over the cow-house for the storage of hay and straw, which can easily be served for food and litter to the cows through two traps in the roof floor (Fig. 8). Over the roots and food mixing room are stores for oil-cakes and other foods, which can be dropped into the trolley below with a minimum of labour.

As an annex to the main building another house is shown for calves and pigs. It will be noticed that the whole disposition of the buildings is arranged with an eye to the manufacture of manure, both liquid and solid. The former by gravity finds its way to the tank and the latter by a comparatively short route can be carried from all animals to the dung-pit.

Many of the principles advocated above have been adopted at the Manor Farm, Wantage, which I have just completed for J. Madson-Mygdal, R.O. The cow-house is planned to accommodate 160 cows, standing in four rows

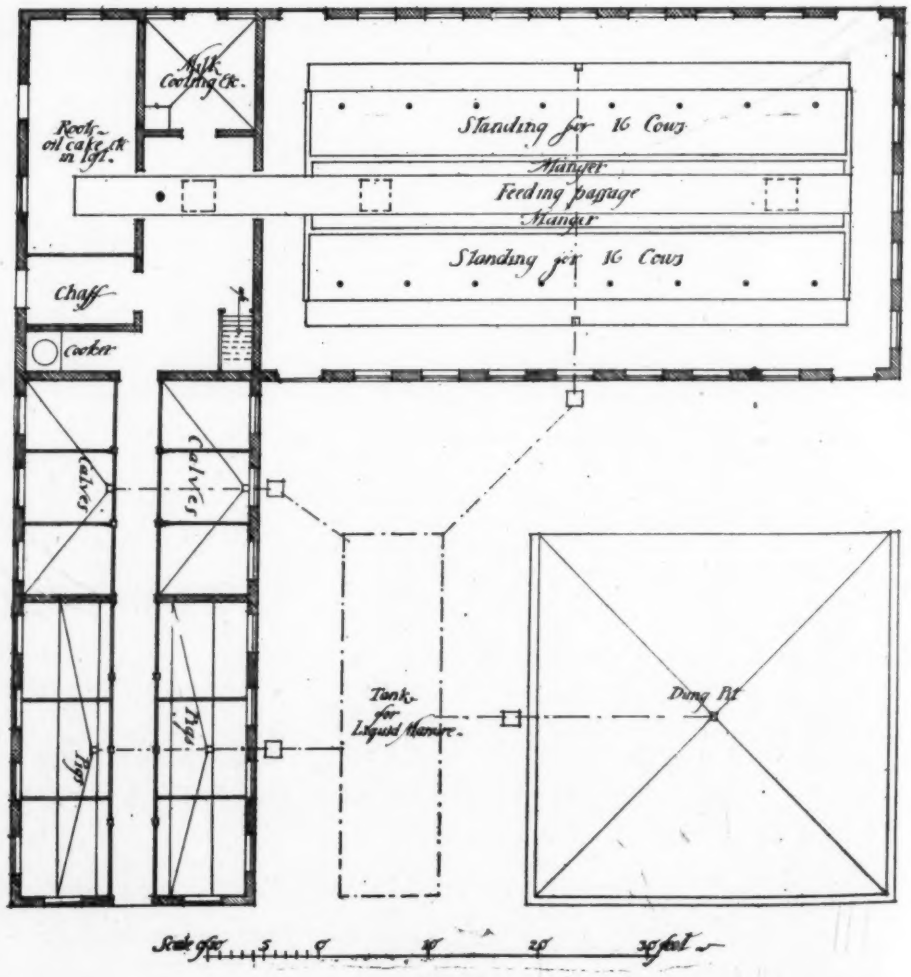


Fig. 7.

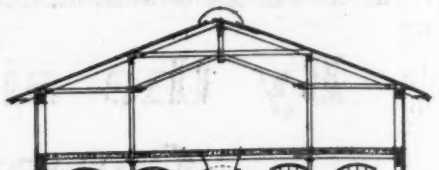


Fig. 8.

(Fig. 9), with feeding passages between the heads of the animals. The low building on the right of the view (Fig. 10) gives a good idea of the appearance of the cow-house from the outside. The other buildings are barns, calf-house, granary, and other adjuncts of a modern farm.

ECONOMIES DURING THE WAR.

THE Lord Mayor of London presided at the opening of a Conference of local authorities and others called by the Royal Sanitary Institute, at Buckingham Palace-road, on Friday last week, to consider the question of "Sanitary Administration under War Conditions," and said that, whilst many suggestions regarding economy were now being made, they had to discriminate between what was only sentiment and mere convenience and what might constitute a danger to health.

The Mayor of Westminster, who succeeded the Lord Mayor in the chair, said that no more important question could be discussed at the present time in its relation to public health. Every authority in the country was experiencing the difficulty of maintaining that high standard of sanitation which had been the pride of the

country. In Westminster they had just had to consider the matter of street paving. Many of their streets were paved with wood, and, as that material could only be obtained at a great cost, they had had to curtail their renewals and to content themselves with repairs which he was afraid in the long run would not be economical. They had endeavoured to make use of old wood blocks as far as possible, and were now employing women for cleaning them. The previous day they discussed the paving for Park-lane, and, owing to the cost of wood, had decided to make a trial with a new paving, viz., "Lithomac." It was only an experiment, and it would be interesting to see how that material resisted the heavy traffic to which the lane was subjected.

Mr. H. P. Boulnois, M.Inst.C.E., read a paper, in which he surveyed the whole field of municipal activity and pointed out where economies might be effected. As regarded roads and streets, he said that all road engineers were agreed that any large curtailment of expenditure in this direction would inevitably lead to a much heavier expenditure in the near future. They might to some extent economise by deferring the resurfacing of a road and keeping the existing surface in repair. Tar-spraying should be proceeded with on all roads the surfaces of which were in fair repair. Where wood-block pavement had worn to an extent that renewal seemed imperative, it was sometimes an economy to reverse the blocks and get a further life of four or five years out of them. Women had been employed with considerable success in some towns as street sweepers, the only fault being that they were too particular in cleansing the street like they would their own back yard. Street watering might be reduced to some extent, but it was rather difficult to define the boundary between luxury and necessity with regard to this service. It would be false economy to attempt to diminish the scavenging service, but a great saving could be effected if householders would burn more of the refuse. If a simple domestic cremator could be designed to be attached to either a gas or coal kitchen range it would greatly assist in a much needed reform. Any economies in the direction of sewerage and sewage disposal should receive very careful consideration, or the standard of sanitation might be seriously lowered. Whether the result of stopping contracts which had been entered into on favourable terms would result in an eventual economy was very doubtful if the works had to be finished hereafter, as the trend of all prices was in an upward direction and they were not likely to come down after the war. The only economies which the water engineer could practise was a closer supervision of the pumping station, filter-beds, etc.; but the public could materially assist if they would prevent the excessive waste of water that occurred in all homes and establishments. The work of clearing slum areas must, he feared, be suspended during the war, not only from the difficulty of procuring housing accommodation for the people turned out of their homes, but also the great expense incurred in these operations. Greater vigilance must be exercised temporarily by the health officers in such districts, and very glaring isolated cases dealt with. With regard to "Housing," this would loom large after the war, even if it had not already done so. They heard on all sides of the present dearth of houses for the working classes, aggravated by the establishment of munition works, etc.; but what was to be done? The great rise in the value of labour, materials, and haulage was likely to continue, and every day it would become more difficult to build cheap houses at suitable rents. This, to his mind, was the one great line in which the war would seriously affect the question of the maintenance of the standard of sanitation, and, unless some scheme could be introduced whereby the employers of labour would be held responsible for the provision of suitable houses for their employees, he did not see how the problem was to be solved. The subject was deeply interesting, but would require a paper to itself to properly discuss. A large number of branch libraries and reading-rooms might be closed altogether, and perhaps even all such places, as well as museums. An example in this direction had been given in London by the closing or partial closing of a number of museums. In any case the purchase of books, specimens, and exhibits could be postponed. In some cases the general markets might be closed, or at all events less expensively managed and maintained. Economies in heating, lighting, etc., could be practised in all public buildings, and evening meetings of all kinds should be discouraged. The author also advocated the cutting down of unremunerative tramway services, the utilisation of conservatories, etc., in parks, and forcing houses for vegetables, and various general economies in regard to printing, etc.

Dr. James Wheatley (Medical Officer of Health for Shropshire) followed with a paper which dealt with the question of economy from the medical point of view, and urged the desirability of not neglecting scavenging if the health of the children was to be preserved.

Considerable discussion took place, which followed largely on the line of the danger to health if excessive economy in sanitation was practised.

Dr. Carr (Newcastle-on-Tyne) suggested that local authorities ought to have more control over the plans of houses erected for munition workers. They had had a large number erected in their district, and, thanks to the courtesy of the contractors, they had been able to influence them in several matters, but in regard to drains they were "up against them"! The result was that, whilst in a large area the drainage now was fairly efficient, it would not be efficient after the war or for any extension of the present area.

Major A. J. Martin thought that as men were conscripted for the trenches those left at home ought to be called upon to do the work of scavenging the roads and other like work.

Mr. Chapman (Holborn) expressed the hope that local authorities would set aside money in these times for the work which would be required later. Holborn had set aside £5,000 for roads.

Alderman Todd (Gateshead), Dr. Nash (Norfolk), Dr. Miller (Hereford), Dr. Boobbyer (Nottingham), the Rev. F. Darmody (Wolverhampton), Mr. Cotterill (London), and Dr. Jones (Hereford) also took part in the discussion, and it was decided to ask the Council of the Institute to consider what temporary extension of local powers were necessary in order to economise labour in the public health service and to make it more efficient.

The meeting concluded after votes of thanks to the readers of papers had been heartily agreed to.

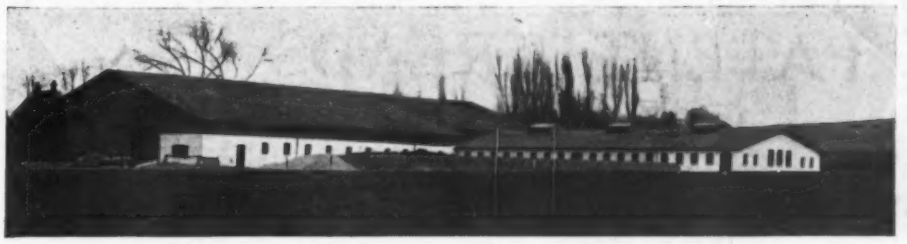


Fig. 10. Design and Construction of Cow-Houses. (*See page* 440.)

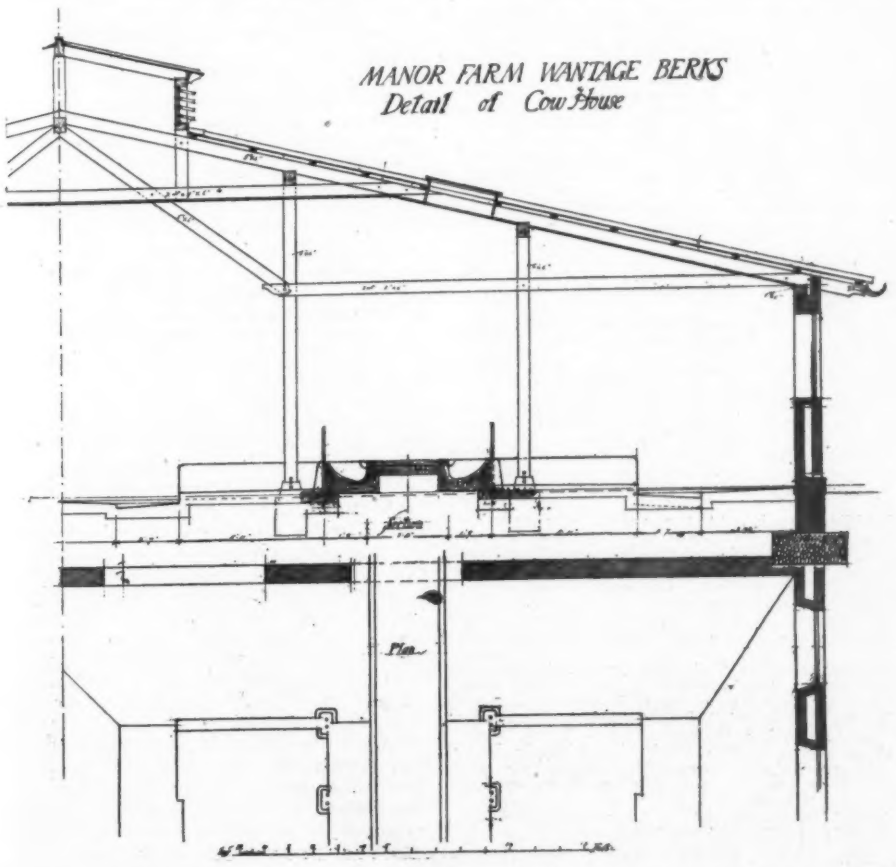


Fig. 9. Design and Construction of Cow-Houses. (*See page* 440.)

WORKMEN'S HALL, SHEFFIELD.

A new workmen's hall has recently been opened at the Tinsley colony in Bawtry-road, Sheffield. An area of 31 acres has been laid in streets and covered with forty-seven blocks of single-storied wooden buildings containing 199 houses for families; fifty-three hostels, each to accommodate thirteen workers and a caretaker; fourteen other hostels, each for twenty-eight workers; and three colony groups, each for 120 workers, who will get their meals in special restaurants. The hall, which will seat about 360 persons, is to be used for recreative and social purposes, and for religious services. The City Architect, Mr. F. E. Edwards, has undertaken the work of arranging for the colonies.

THE BUILDING TRADE.

THE CUTTING OF GALVANISED-IRON.

WE have received the following interesting letter from Sir John Cockburn:—

"SIR,—I recently had occasion to take to pieces for the purpose of re-erection elsewhere a large galvanised-iron shed, and, as an unexpected difficulty was encountered, perhaps some account of the manner in which it was overcome may be of service to those who find it necessary to undertake work of a similar nature. The wooden framework of the structure was slight, the necessary strength being obtained by innumerable mushroom-headed $\frac{5}{16}$-in. screw bolts, by which the sides of the corrugated sheets and their ends in the curved roof were riveted together. The nuts of these were found to be rusted so fast on the threads that, with few exceptions, all attempts to unscrew them, even after copious paraffin and oiling, were futile. An attempt was made to separate the sheets by cutting through the bolts or splitting the nuts with cold chisels, but progress was so slow and the damage to the iron so great that this had to be abandoned. No better success attended the use of hack saws. Bolt croppers were tried, but it was found impossible to insert the jaws of these either outside or inside. Many machinists were consulted without avail. At last I came to the conclusion that what was required was a bolt cropper with pincer jaws not more than $\frac{3}{4}$-in. wide and capable of opening wide enough to pass over the nuts on the inside, so as to seize and divide the bolt within the hollow of the corrugated-iron. There was, however, no such tool to be obtained in London. Eventually Messrs. Buck & Hickman, 2, Whitechapel-road, made one for me by converting a pair of the shear jaws of Porter's No. 2 "New Easy" Bolt Clipper into pincer jaws. With this the nuts were snipped off almost as easily as one gathers blackberries, and the job was finished in a very short time without the slightest damage to the iron. JOHN A. COCKBURN."

PROPOSED NEW BUILDINGS AND OTHER WORKS.*

IN these lists care is taken to ensure the accuracy of the information given, but it may occasionally happen that, owing to building owners taking the responsibility of commencing work before plans are finally approved by the local authorities, "proposed" works, at the time of publication, have been actually commenced. Abbreviations:—T.C. for Town Council; U.D.C. for Urban District Council; R.D.C. for Rural District Council; E.C. for Education Committee; L.G.B. for Local Government Board; B.G. for Board of Guardians; L.C.C. for London County Council; B.C. for Borough Council; and P.C. for Parish Council.

Aberdeen.—The Plans Committee of the T.C. has approved of the following new buildings in Aberdeen:—Alterations and additions in connection with premises on the north side of Spring Garden, for Messrs. W. M'Kinnon & Co., Ltd., engineers, per Mr. George Coutts, architect; offices, York-place, for Messrs. Hall, Russell, & Co., Ltd., per Mr A. H. L. Mackinnon, architect; petrol store in connection with Phœnix Works, Russell-road, for Messrs. W. Riddell & Co., oil merchants; shelter in connection with Grammar School recreation ground, Harlaw-road, for the Aberdeen School Board, per Messrs. Walker & Duncan, architects; stable, Wellington-street, for Mr. Alexander Walker, carting contractor, per Mr. John Rust, architect; alterations in connection with the premises, Nos. 77 and 79, Crown-street, for Messrs. Mackenzie & Wilson, advocates, per Mr. W. J. Devlin; temporary building in connection with St. Fittick's Church, Walker-road, per Mr. James Clark, session clerk; temporary building (boiler house) in connection with King's College, for the University Court, per Mr. D. R. Thom, Secretary to the University; plan of coal sheds, Regent-road, for Messrs. Ellis & M'Hardy, coal merchants, per Messrs. Kelly & Nicol, architects.

Beaconsfield.—The U.D.C has passed the following plans:—Building plan, house, Curzon-avenue, Mr. E. H. Goodyear; drainage plans, The Firs, Burke's-road, Mr. T. G. Cowan; the Gas House, Station-road, Uxbridge Gas Company; Mordeen, Reynolds'-road, Mrs. Garth.

Burnley.—The Burnley Borough Surveyor has been instructed to draw plans and estimates of a building for a central reference and reading library.

Cambuskenneth.—The Patrons of Cowane's Hospital have adjusted the articles of roup of ground at Cambuskenneth. The ground has been feued to Mr. John Fraser, architect, Dunfermline, on behalf of a company for the erection of houses of the class suitable for miners.

Canada.—The Imperial Trade Correspondent at Toronto reports that a company which has been operating two stores in that city for many years is increasing its capital to 7,500,000 dollars for the purpose of erecting new premises and acquiring a departmental store at Montreal as a subsidiary enterprise.

Derby.—The Improvement and Construction Committee of the T.C. has approved ten building plans.

Dundee.—Plans passed by the T.C.:—Byron-street, boiler-house for Messrs. Francis Stevenson & Sons; West-street, alterations on warehouse for Messrs. Francis Stevenson & Sons; Yeaman Shore, shed for Messrs. Nicoll & Son.

Girvan.—Girvan T.C. recently considered a petition from the proprietor of Bargany Estate for warrant to lay-out two new streets between Montgomerie-street and the railway. It was stated that miners' houses are to be built on the new streets, and that it was necessary that the erection of these houses should be proceeded with at once. The Council continued the petition for a week in order to suggest several modifications of the plans.

Glamorgan.—At a recent meeting of the Glamorgan Roads and Bridges Committee it was stated that the Roads Board was prepared to make a grant of £6,000 towards the cost of tar-spraying and tar-macadamising the roads in the county during the year. It was stated that the proposed road improvement near the Cow and Snuffers Hotel, Llandaff North, was to be proceeded with forthwith. The Surveyor added that it was proposed to spend altogether about £13,500 on road repairs during the year.

Glasgow.—Glasgow Dean of Guild Court has granted the following linings:—The Cassel Cyanide Company, Ltd., 19, St. Vincent-place, to erect an extension to their works in Shuna-street; Messrs. Millers, Ltd., tanners, 847, Duke-street, to erect a new boiler shed; Messrs. Frederick Braby & Co., Ltd., Petershill-road, to extend their sheet mill; Messrs. Barr & Stroud, Ltd., engineers, to erect workshop sheds at Caxton-street, Anniesland; Messrs. Andrew Brown & Son, rope manufacturers, 52, Bellfield-street, to erect workshop, office, and store; Messrs. George Christie, Ltd., 197, Broomloan-road, Govan, to add to their works; Messrs. David Carlaw & Sons, engineers, 11, Finnieston-street, to construct an additional story in Houldsworth-street.

Grimsby.—The R.D.C. has passed a plan for a new temporary mortuary near the Police Station at Immingham.

Kensington.—The Licensing Justices have passed plans of alterations intended to be carried out in the Portobello Tavern, 138, Portobello-road, Kensington.

Kinghorn.—A glass-blowing establishment at Kinghorn are extending their premises at a cost of £13,000.

London.—The Licensing Justices have passed plans of alterations to the Rose and Crown, Union-street, St. George, Mr. D. Aylott, licensee, and the Angel, Upper Ground-street, Christchurch, licensee, Mr. J. Donaghy.

Marsden.—The Health, Sanitary, and New Buildings Committee has approved the plan of a workshop in Peel-street for Mr. James Schofield.

Middlesbrough.—At the recent conference of local ironmasters, employers of labour, and education authorities of Durham and the North Riding, held at Middlesbrough, a scheme was launched for the establishment of a technical college at Middlesbrough.

Newcastle.—Plans for the erection of a new electric power station have been approved by the U.D.C.

Ramsgate.—The T.C has approved plans for the erection of a female staff and officers' room, Ramsgate Brewery, owners, Messrs. Tomson & Wotton, Ltd.; and for alteration at 15, Albion-place, owner, Mr. Dicker.

Ravensthorpe.—The Yorkshire Electric Power Company contemplates making extensions to its central station at Ravensthorpe at an expenditure of £100,000.

Redhill.—The Reigate T.C. has approved plans from Messrs. Love & Malcolmson, Ltd., for the reconstruction of the Athenæum Printing Works, Redhill.

Southwick.—At a recent meeting of the Southwick-on-Wear U.C. a plan was approved for the erection of an electric power sub-station at the Southwick yard of Messrs. Swan, Hunter, & Wigham Richardson. The firm are extending their premises and making provision for executing more work.

Tunbridge Wells.—The Burial Board Committee of the T.C. has decided to tar paint the paths at the cemetery, at a cost of £166.

Wantage.—At a recent meeting of the R.D.C. tenders were received for laying a drain at Letcombe Regis for dealing with the flooding there, and referred to a committee to deal with and report. It was also resolved that an application be made to the L.G.B. for sanction to borrow the sum of £2,550 to carry out a scheme of drainage for the parish of Letcombe Regis. The Surveyor has been instructed by the U.D.C. to tar paint Church-street in addition to the streets usually treated.

* See also our list of Competitions, Contracts, etc., on page 446.

WAGES IN THE BUILDING TRADE.

Dublin.—The following are particulars of advances in wages or war bonuses given to the various trades from October 18, 1915, to June 9, 1916, with the various dates same came into operation:—Labourers: War bonus at the rate of 6d. per day for each day worked provided no time is lost by default of workman. Came into operation October, 1915. Electricians: Increase from 9¼d. to 9¾d. per hour; when working the winter hours, 10¾d. Men engaged on War Office work or work directly controlled by the War Office to be paid in addition to this a war bonus of 3s. per week or 6d. per day or any part thereof. Came into operation November 22, 1915. Brassfounders, Finishers, and Gasfitters: Increase from 36s. per week to 38s. per week from April 1, 1916. Carpenters: Increase from 9d. to 9¾d. from May 12, 1916, and a further ¼d. on June 27, 1916, bringing the rate up to 10d. Bricklayers: Increase of ¼d. per hour, making the wages 10d. per hour, and in addition a further ½d. per hour war bonus. The wages therefore will be 10½d. per hour until the next pay day after peace is signed, after which the rate will be 10d. per hour. The wages and war bonus came into operation on May 19, 1916. Overtime to be computed at the 10d. rate. Painters: War bonus to be at the rate of 4d. per day for each day worked, provided no time is lost by default of workman. Apprentices to be 2d. per day under same conditions. Bonus to be paid for week ending June 3, 1916. Plasterers: Increase from 9d. per hour to 9¾d. (fifty-hour week) and a war bonus of ¼d. per hour during the continuance of the present war, bringing the wages to 10d. until next pay day after peace is signed. Overtime to be computed at the 9¾d. rate. The increase to come into operation as from May 22, 1916.

Portsmouth.—At the recent quarterly meeting of the South-Eastern Centre Board of Conciliation for the Building Trades an appeal was heard from the following trades in this district:—Carpenters and joiners, bricklayers, masons, plasterers, painters, plumbers, navvies, and labourers, for advance of wages and alterations of rules. The appellants' case was stated by Messrs. Healy and Lacey (carpenters and joiners), Penn (bricklayers), and Pearson and Glasgow (painters). The demand was for an advance of wages of 1½d. per hour in the case of carpenters and joiners, bricklayers, plasterers, and masons, and of 2d. per hour in the case of plumbers, painters, navvies, and labourers, and was based upon the increased cost of living and exceptional conditions prevailing. The demand included a new rule for an extra rate for men employed on silicate-cotton work, an addition to the rule as to shaft and steeple work so as to extend it to buildings and works of construction, and a further addition for firework and work in confined spaces, an alteration of the overtime rate on Saturdays, and a new rule to provide for night-gang work. The appellants made a strong point of the advances already conceded in other towns during the

past twelve months or so, and urged that the war conditions had in effect taken away from them the purchasing power which their wages formerly gave them, and they asked that it be partially restored to them by the advance of wages, etc., demanded. For the employers Messrs. Privett, Salter, Coghlan, and Roskell appeared, and in their reply traversed the arguments of the appellants. They agreed generally as to the increased cost of living, and to meet the views of the operatives they now suggested that the summer working hours should be increased and the increase paid for at time and a quarter. After answering questions the parties retired, and the Board considered and decided the case as follows:—"That this Board, having heard the case from the employees and employers of Portsmouth, hereby decides that the case will be met by the payment of 2s. 6d. per week as war bonus, as from May 1, 1916, which bonus shall cease three months after peace is declared, no bonus to be paid until a full week has been made except where time is lost by stress of weather." The Board then considered and settled the remainder of the operatives' demands as follows:—Rule 2: Rates of wages as before plus war bonus as per resolution given above. Proposed new rule *re* silicate-cotton work struck out. Rule 3: Rule to remain as before with the addition, "That all men engaged on culvert work receive ½d. per hour extra, and all men on hot work 2d. per hour extra, such places to be cooled down below 120 deg. before being repaired." Rule 5: Rule to remain as before, but with the overtime rate on Saturdays varied so that the rate from 12 noon to 8 p.m. shall be paid for at time and a half, after 8 p.m. double time. Also the addition of the following as to night gangs:—"Men engaged on a night gang to be paid 1d. per hour in addition to the ordinary rate of wages, but the hours worked without overtime rates not to exceed fifty per week, being ten hours each night for five nights during summer, and not to exceed forty-five per week, being nine hours each night for five nights during winter. Meal-time hours during the night to be one and a half. From Saturday midnight to Sunday midnight, double time. Any time worked by a night gang between leaving off time on Saturday morning till starting time Monday night shall be paid for according to the following rates:—The first four hours worked on Saturday, time and a half, afterwards double time till starting time on Monday night, at night gang rates."

TRADE NEWS.

The Sherburn Picture Hall, Hull, is being supplied with Shorland's special inlet ventilators by Messrs. E. H. Shorland & Brother, Ltd., of Failsworth, Manchester.

Boyle's latest patent "air-pump" ventilators and latest improved air-inlet brackets have been adopted for the offices of Messrs. Engert & Rolfe, Ltd., at Barchester-street, Poplar, E.

We have received a copy of a new price list of Clincher Band Solid Rubber Tyres, just issued by the North British Rubber Company, Ltd., Castle Mills, Edinburgh. These tyres are supplied for use in the United Kingdom, and are guaranteed for 10,000 miles' service. The price list shows patterns of the tyres.

"Coatostone" has been ordered by His Highness Maharajah Alwar for internal and external treatment of Seriska Palace, India, and the same has been exported by the Stone Preservation Company, Ltd., of 9a, Little James-street, Gray's Inn, W.C., who have purchased the Coatostone Decoration Company, and are now the sole proprietors and manufacturers of "Coatostone."

With reference to the particulars of an improved window fitting which appeared in our last issue, it should have been stated that the patent referred to has passed beyond the provisional stage, the complete specification having been accepted and the patent sealed. The present address of the patentee (Mr. J. Stanford) is "Ledbury," 3, Hardwicke-road, Reigate, Surrey.

RATES OF WAGES IN THE BUILDING TRADE.

THE following are the present rates of wages in the Building Trade in the principal towns of England and Wales. It must be understood that, while every endeavour is made to ensure accuracy, we cannot be responsible for errors that *may* occur:—

—	Masons.	Bricklayers.	Carpenters, Joiners.	Plasterers.	Slaters.	Plumbers.	Painters.	Masons' Labourers.	Bricklayers' Labourers.	Plasterers' Labourers.
	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.
Aberdare	9½	9½	9½	9½	9½	9	8	6½	6½	6½
Accrington	10	10	10	9½	9	9	9½	6½	6½	6½
Altrincham	9½	10½	11	10	8½	10	10	6½	7½	7
Ashton-under-Lyne	11	11	10½	10½	9	10	10	7	7	7½
Barnsley	9½	9½	9½	9½	9	9½	8½	7½	7½	7½
Barrow-in-Furness	9½	10	9½	9½	9½	9½	9½	7	7	7
Barry	9½	9½	9½	10	—	9	8½	6½	6½	6½
Bath	8½	8½	8½	8	7½	8	7½	6	6	6
Bedford	8	8	8	8½	8	9	6½	5½	5½	6
Birkenhead	1/-	1/-	1/-	11	11	1/-	9½	8	8	8
Birmingham	11½	11½	11½	11½	10½	11½	10½	8½	8½	8½
Bishop Auckland	9	9	9	9½	10‡	9	8	6½	6½	7½
Blackburn	10	10½	10	10	9½	10	9½	6½	7½	7½
Blackpool	11	9½	9½	9½	8½	9½	9½	6	6	6
Bolton	10½	11	10½	10½	10	10†	9½	6–7	7	7
Bournemouth	8½	9	9	9	8½	9	8½	6½	6½	6½
Bradford	10†	10½	10	9½	10	10	9½	8	8	8
Bridgwater	6½	6½	6½	6½	6½	6½	6	4	4	4
Brighton	9	9	9	9	—	9	7½	6½	6½	6½
Bristol	10½	10½	10½	10½	—	10½	9½	8	8	8
Burnley	10	10½	9½	9½	8	9½	9½	7	7	7½
Burton-on-Trent	9½	9½	9½	10	9	9½	8½	7	7	7
Bury	11	11	10½	9	10	10½	10	7	7½	7½
Cambridge	9½	9	9	9½	9½	9½	7½	6	6	6
Canterbury	8½	8	8	10	—	8½–9	7	5	5	5
Cardiff	10½	10½	10½	10½	10½	10½	9½	7½	7½	7½
Chatham	8	9	9	9	9	9	7½	6	6	6
Chelmsford	8	7½	8½	9	—	7½	6½	5	5	6½
Cheltenham	8½	8½	8½	8½	—	8½	8½	6	6	6
Chester	9½	10	10	9½	9½	10½	9½	6½	7	6½
Chesterfield	9	9½	9	8	9	8½	8½	5½	5½	5½
Colchester	8	8½	8½	9	8	9	6	5½	5½	5½
Coventry	10½	11	11	10½	11	11	10	8½	8½	9
Crewe	7½	8	7½	9	8½	8	7½	5½	5½	6
Darlington	9½	10	10	10½	10	9½	9	7	7	7
Derby	9½	10	10	9	9	9½	8	7	7	7½
Doncaster	9½	9½	9½	9½	9	9	8	6½	6½	7½
Dudley	8½	10	10	8½	8½	8	7½	6½	6½	6½
Durham	9½	9½	9½	9½	10	9	8½	6½	6½	7
East Glam. and Mon. Valleys	10	10	10	10	—	—	9	7	7	7
Exeter	8	8½	8½	8½	7½	7½	7½	5½	5½	5½
Folkestone	8½	9	9	9½	8½	9	8	7	7	7
Gloucester	8	8½	8½	8	8	8½	8	6	6	6
Grantham	8	8	7½	7½–8	7½–8	7	6½	5	5	5
Grays	—	10	10	—	—	9½	8½	7	7	7
Grimsby	9	9	9½	9½	9	9	8½	7	7	8
Great Yarmouth	8	8	8	—	8	8	6½	5	5	—
Halifax	10	10	9½	9	9	9	9½	7	7	7
Harrogate	9½	9½	9½	9	8	9½	8½	6½	6½	6½
Hartlepools	10	10½	10½	10½	10‡	10½	9	7½	7½	8
Hastings	8½	8	8	8½	8	8	7	6½	5½	6½
Hereford	8	8	7½	8½	8	7	7	5½	5½	5½
Huddersfield	11	11	10½	9½	10	9	8½	7½	7½	7½
Hull	10½	10½	10½	10½	10	10	9	8½	8½	8½
Ipswich	8½	8½	8½	9	9	8½	7	5½	5½	5½
Lancaster	10	10	9	9½	9	9	9	6	6	6½
Leamington Spa	9	9	9	8½	9	9	8	6½	6½	6½
Leeds	10½	10½	10½	10½	10½	11	9	8	8	8½
Leicester	10½	10½	10½	10½	11	10½	9	8	8	8½
Lincoln	9	9½	9½	9	8½	8½	8	6	5½	6½
Liverpool	1/-	1/-	1/-	11	11½	1/-	10½	8	8	8
Llanelly	9½	9½	9½	8½	9	8½	8	5½	5½	5½
London	11½	11½	11½	11½	—	1s.	9	8	8	8
Loughborough	9	8½	9	9	9	8½	8½	5½	5½	6½
Luton	9½	9	9	8½	9	8½	7½	6½	6½	6½
Maidstone	9	9	9	9	9	9	8	6	6	6
Manchester	11	11	11	11	10	11	10½	7½	7½	7½
Mansfield	8½	10	9½	8½	—	9½	9	7	7	7
Merthyr Tydfil	9½	9½	9½	9½	9½	9	8½	6½	6½	6½
Middlesbrough	10	10½	10½	10½	10‡	10½	9	7½	7½	8
Newcastle-on-Tyne	11	11	11	11	10	10½	10	7½	7½	7½
Newport, Mon.	10	10	10	10	8½	10	9½	7	7	7
Northampton	9	9	9	9	8½	9	8	6	6	6
Norwich	8½	8½	8½	8½	8	8½	7½	6	6	6
Nottingham	11	11	11	10½	10½	11	10	8½	8½	9
Oldham	11	11	11	10	9	10	9½	7½	7½	7½
Oxford	9½	9	9	9	8	9	8	6½	6½	6½
Plymouth	9*	9*	9*	9*	9	9*	8½	6½*	6½*	6½*
Pontypridd	9½	9½	9½	9½	9½	9½	8½	6½	6½	6½
Portsmouth	9½‡	9½‡	9½‡	9½‡	9½	8½‡	7½	7‡	7‡	7‡
Preston	10½	10½	10	9½	9½	10	9½	6	7	7½
Reading	9	9	9	9½	—	9	7½	6*	6*	6*
Rochdale	10½	10½	10½	10	9½	10	9½	7½	7½	7½
Rochester	8	9	9	9	9	8½	7½	6	6	6
Rugby	10	10	10	10½	8½	10	9	6½	6½	6½
St. Albans	9	9	9	9–10	9	9–10	8	7	7	7
St. Helens	9	9½	10†	9½	9½	9½	10½	6	6½	6
Scarborough	9	9½	9	8½	8	9	8	7	7	7
Sheffield	10½	10†	10½	9½	10	10	9	7½	7½	7½
Shrewsbury	8½	9½	9½	9½	—	8½	7	6½	6½	6½
Southampton	8½	9½	9½	8½	—	9½	8½	6½	6½	6
Southend-on-Sea	9	9	9	9	P'cework	9	7	6	6	6
Southport	10	10	10½	9½	9½	10	9½	6½	7	7
South Shields	11	11	11	11	10	10½	10	7½	7½	7½
Stockport	11	10½	10½	10½	9½	10	9½	6½	7	7½
Stockton-on-Tees	10	10½	10½	10½	10‡	10½	9	7½	7½	8
Stoke-on-Trent	9	9½	9	9	—	8½	8½	6	6	—
Stroud	8	8	8	8	7½	7½	7½	6	6	6
Sunderland	11	11	11	11	10‡	9½	9½	7½	7½	7½
Swansea	10½	10½	10½	10½	10½	9	10	7½	7½	7½
Taunton	7	7	7	7	—	6	6½	4½	4½	4½
Torquay	8	8	8	8	8	8	8	6	6	6
Wakefield	9½	9½	9	9½	8½	9	9	7	7	7
Walsall	10	9½	9½	9½	8½	10	8½	7½	7½	7½
Warrington	8½	10½	10½	10½	8½	10½	9½	6½	6½	6½
West Bromwich	10½	10½	10	10½	—	9½	8	7½	7½	7½
Wigan	10½	11	10	10	9½	10½	9½	7	7	7
Windsor	9	9	9	10	—	9	—	6	6	6
Wolverhampton	10½	10½	10‡	11	8	10	9	7½	7½	7½
Worcester	8½	9½	9½	9½	9	9½	8	6½	6½	6½
York	9½	9½	9½	9½	9½	9½	8½	7	7	7

The mason's rate given is for bankers; fixers usually ½d. per hour extra.

* War bonus of 2s. per week granted. † War bonus of 3s. per week granted. ‡ War bonus of 2s. 6d. per week granted

List of Competitions, Contracts, etc.

For some contracts still open, but not included in this List, see previous issues. **Those with an asterisk (*) are advertised in this number:** Competitions, —; Contracts, iv., vi.; Public Appointments, xxii.; Auction Sales, xxiv. Certain conditions beyond those given in the following information are imposed in some cases, such as: the advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bona-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

*** It must be understood that the following paragraphs are printed as news, and not as advertisements; and that while every endeavour is made to ensure accuracy, we cannot be responsible for errors that *may* occur.

Contracts.

BUILDING AND PAINTING.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

JUNE 16.—**Troedyrhiw.**— RENOVATING. — For renovating Nazareth Chapel, Troedyrhiw. Specification, etc., at 112, High-street, Merthyr. Mr. C. M. Davies, M.S.A.

JUNE 19. — **Banteer.**—CREAMERY.—The Committee of the Banteer Co-operative Creamery invites tenders for the erection of a central creamery at Banteer. Plans and specification with the Secretary, Mr. Jeremiah Sheehan, Banteer, Co. Cork.

JUNE 19.—**Ebbw Vale.**—PAINTING.—The Ebbw Vale E.C. invites tenders for the following works:—Contract A.—To paint the whole of the outside woodwork and ironwork at the Willowtown Schools, Ebbw Vale. Contract B.—To paint the whole of the outside woodwork at the Duffryn School, Cwm. Specifications, etc., at the office of Mr. T. J. Thomas, the Town Surveyor.

JUNE 20. — **Dublin.** — PLUMBING, ETC. — For plumbing and gasfitting works and supplies required at the buildings in the Dublin district in charge of the Commissioners of Public Works for a period of one year. Forms of tender, etc., of Mr. H. Williams, Secretary, Office of Public Works, Dublin. Deposit, £1.

JUNE 20.—**Hunslet.**—BRICKLAYERS', ETC., WORK. —The Guardians invite tenders for bricklayers', joiners', plumbers', and ironmongers' work for three months. Tender forms of Mr. Fred W. Mee, Clerk to the Guardians, Union Offices, Glasshouse-street, Hunslet.

JUNE 20.—**Liverpool.**—PAINTING.—The Select Vestry invite tenders for cleaning down and painting work at the Highfield Military Hospital, Knotty Ash. Tender forms, etc., of the Clerk to the Select Vestry, Parish Offices, Brownlow-hill, Liverpool.

JUNE 20. — **Oldham.** — PAINTING.—The Free Libraries Committee invites tenders for painting the outside woodwork, etc., at the Central Library and Art Gallery. Specification, etc., at the office of the Borough Librarian.

JUNE 20.—**Wigan.**—EXTENSIONS.—The Electricity Committee of the Corporation invite tenders for the erection of extension to boilerhouse:—Contract No. 1, concrete foundations, brickwork, joinery, plumbing, slating, etc.; and Contract No. 2, steel construction work. Specification, etc., from Mr. A. T. Gooseman, Borough Engineer, Wigan. Deposit, £1 1s.

JUNE 21.—**Redruth.**—PAINTING.—For painting to be done at the following schools:—Troon Roskear, Cusgarne, Barncoose, Carnkie, Illogan, Nancekuke, Pool, East Enf, Treleigh, for the Redruth and Camborne District E.C. Specifications at the Education Office, Redruth.

JUNE 22.—**Longniddry.**—COTTAGES.—The Scottish Veterans' Garden City Association invites tenders for the whole or any of the work required in the erection of cottages at Longniddry. Plans, etc., at the office of the architects, Messrs. Henry & MacLennan, 7, South Charlotte-street, Edinburgh. Deposit, £1.

JUNE 22.—**Manchester.**—PAINTING.—The Gas Committee invites tenders for painting of buildings and plant at the Droylsden Gas Works. Specification, etc., of Mr. Fredk. A. Price, Superintendent, Gas Department, Town Hall, Manchester. The buildings and plant may be inspected on application to the Engineer, Mr. J. G. Newbigging, M.Inst.C.E., at his office, Rochdale-road Station.

JUNE 27.—**Carlisle.**—HOSTEL.—The Directors of the North-Eastern Railway invite tenders for the erection of hostel for trainmen at Carlisle. Plans, etc., of the Goods Agent, N.E. Railway, Carlisle. Quantities from Mr. Arthur Pollard, the Company's Architect, at York

* JUNE 27. — **Isleworth.** — PAINTING. — The Brentford Guardians invite tenders for painting at their buildings at Isleworth.

JUNE 29.—**Sunderland.**—REPAIRS.—For making good considerable damage at the Wheat Sheaf Car Depot. Particulars from the General Manager, Tramway Offices, Monkwearmouth.

JULY 3. — **Southampton.** — PAINTING. — The Southampton Harbour Board invite tenders for painting warehouses and cranes for Town Quay, Southampton. Specification, etc., of the Board's Engineer, Harbour Offices, Town Quay, Southampton. Deposit, £1.

JULY 8.—**Kilkenny.**—BRIDGE.—The Counties of Kilkenny and Wexford invite tenders for the building of a bridge in reinforced concrete over the River Barrow at Ferry Mountgarrett, together with accessory works. Plans, etc., of Messrs. Delap & Waller, 115, Grafton-street, Dublin, or of Mr. A. M. Burden, County Surveyor, Kilkenny. Deposit, £20.

JULY 10.—**Harwich.**—REFUSE DESTRUCTOR.—For the design and construction of a refuse destructor. Sketch plan of site and general conditions of Mr. F. Harold French, Borough Surveyor, Harwich. Deposit, £1 1s.

NO DATE.—**Aspull (Lancs).**—RESLATING, ETC.—For reslating shop and pointing. Particulars of Mr. W. Byrom, 15, Smith-street, Haigh-road, Aspull.

NO DATE.—**Cork.**—ALTERATIONS, ETC.—For sundry alterations and repairs, and from plumbers for plumbing and sanitary work proposed to be carried out at the Refuge Laundry, Cork, for the Committee of the Buckingham House Free School, Cork. Particulars from Messrs. Robert Walker & Son, architects, Cork.

NO DATE.—**Leeds.**—DEMOLITION, ETC.—For the demolition and re-erection of buildings in Hunslet-road, Leeds, for Messrs. Clemens, Marshall, & Carbert. Quantities of Mr. C. Castelow, A.R.I.B.A., Red Hall Chambers, Guildford-street, Leeds.

FURNITURE, MATERIALS, etc.

JUNE 17.—**Kingston-upon-Hull.**—MATERIALS. —Supply to the Guardians of Kingston-upon-Hull Incorporation for the Poor of paints, oils, colours, etc. Forms of tender of Mr. Robert H. Winter, Solicitor, Clerk to the Guardians, St. Mary's Chambers, Lowgate, Hull.

JUNE 19.—**Leicester.**—MATERIALS.—Supply to the B.G. of building materials. Forms of tender of Mr. Herbert Mansfield, Clerk, Poor Law Offices, Leicester.

JUNE 20.—**Brighton.**—MATERIALS.—Supply to the Guardians of builders' materials. Forms of tender, etc., at the Guardians' Clerk's Office, Prince's-street.

JUNE 21.—**Bristol.**—MATERIALS.—Supply to the B.G. of builders' materials. Forms of tender of Mr. J. J. Simpson, Clerk to the Guardians, St. Peter's Hospital, Bristol.

JUNE 21.—**Derby.**—WHITE LEAD, ETC.—Supply to the Derby County Asylum, Mickleover, near Derby, of white lead, oils, etc., for six months. Tender forms of the Clerk and Steward of the Asylum.

JUNE 22.—**Dewsbury.**—OILS AND PAINTS.—Supply to the Guardians of oils and paints for three months. Forms of tender of Mr. C. P. Pickersgill, Clerk to the Guardians, Union Offices, Wellington-street, Dewsbury.

JUNE 26.—**Salford.**—MATERIALS.—Supply to the Electricity Department of builders' materials. Specifications, etc., from Borough Electrical Engineer, Electricity Works, Frederick-road, Salford.

JUNE 30.—**Powick.**—PAINTS AND OILS, ETC.—Supply to the Committee of Visitors of Worcester County and City Asylum, Powick, of paints and oils, etc. Forms of tender from the Storekeeper.

SEPTEMBER 6.—**Aberaman.**—OILS, PAINTS, ETC. —Supply to the Directors of the Powell Duffryn Steam Coal Company, Ltd., of grease and oils, paints, etc. Forms of tender, etc., of the Stores Manager, Aberaman Offices, near Aberdare.

NO DATE.—**Grangemouth.**—MATERIALS.—Supply to the B.C. of builders' materials Schedules on application to the Subscriber. Mr. David A. Donald, C.E., Burgh Engineer, Burgh Engineer's Office, Town Hall, Grangemouth.

ENGINEERING, IRON, AND STEEL.

JUNE 17.—**Halifax.**—STEELWORK.—The Electricity Committee of the Halifax Corporation invite tenders for the supply and erection of steelwork over the dam at the Electricity Works. Specifications, etc., of Mr. James Lord, M.Inst.C.E., Borough Engineer, Town Hall, Halifax. Deposit, £1.

JUNE 19.—**Sedgley.**—GAS MAIN.—For the laying of about 600 yds. of 12-in. C.I. gas main for the U.D.C. Particulars of Mr. Thomas R. Knight, Clerk of the Council, Council House, Sedgley.

JUNE 22. — **Southampton.** — ALTERATIONS TO HEATING SYSTEM.—The Public Libraries Committee invite tenders for alterations to the Central Library heating system. Specification, etc., at the office of the Borough Engineers, 123, High-street, Southampton.

JUNE 26.—**Salford.**—CONVEYORS AND BUNKERS, ETC.—Supply to the Electricity Department of conveyors and bunkers, foundations for boilers, steam and water piping. Particulars from the Borough Electrical Engineer, Electricity Works, Salford.

JULY 3. — **Southampton.** — CONDUIT. — The Southampton Harbour Board invites tenders for constructing a conduit for electric mains, Town Quay, Southampton. Specification, etc., of the Board's Engineer, at the Board Offices, Town Quay, Southampton. Deposit, £1.

JULY 10.—**Shortlands.**—BOILERS.—The Metropolitan Water Board invite tenders for the manufacture and erection of two Lancashire boilers, together with economiser, superheaters, piping, feed pump, and other contingent work, at the Shortlands Pumping Station, Valley-road, Shortlands, Kent. Forms of tender, etc., at the office of the Board, Savoy-court, Strand, London, W.C. (Engineer's Department). Deposit, £1 1s.

* NO DATE.—**Shanghai.**—HEATING PLANT.—The Shanghai Municipal Council invite tenders for installation of heating plant in the new central offices.

ROAD, SANITARY, AND WATER WORKS.

JUNE 19.—**Dalmeny.**—WATER SUPPLY IMPROVEMENT.—The Linlithgow District Committee of the C.C. of Linlithgow are prepared to receive tenders for cutting and refilling tracks for and laying and jointing about 6,500 yds. of 3-in. and 2-in. cast-iron pipes for the improvement of the water supply to Dalmeny Hospital. Plans, etc., at the office of the Engineers, Messrs. J. & A. Leslie & Reid, C.E., 72A, George-street, Edinburgh. Deposit, £1.

JUNE 21.—**Erith.**—SEWERS, ETC.—For the laying of cast-iron and stoneware sewers and air main, the construction of an ejector chamber, and the installation of three ejectors, and other incidental work for the U.D.C. Plans, etc., from the Surveyor to the Council, Council Offices, Erith. Deposit, £2 2s.

JULY 3.—**Ealing.**—STONEWARE PIPES, ETC.—Supply to the T.C. of stoneware pipes, etc. Tender forms, etc., of Mr. J. Douglas Knight, A.M.Inst.C.E., M.I.M.E., M.I.E.E., etc., Borough Electrical Engineer and Manager, Electricity Supply Department, Town Hall, Ealing, W.

Public Appointment.

* NO DATE.—TEMPORARY CLERK.—The Metropolitan Borough of Holborn invite applications for the above post.

Auction Sales.

* JUNE 20.—**Deptford.**—Messrs. Jenkins, Sons, & Webster will sell by auction, on the premises, the machinery, plant, and freehold premises of a builder and contractor.

* JUNE 21.—**Blackheath.**—Messrs. Dyer, Son, & Hilton will sell by auction, at the Mart, a freehold building estate.

* JUNE 28.—Messrs. Churchill & Sim will sell by auction, at the Great Hall, Winchester House, Old Broad-street, E.C., an assortment of deals, battens, boards, timbers, etc.

[Those with an asterisk (*) are advertised in this issue.]

PRICES CURRENT OF MATERIALS.

[Owing to the exceptional circumstances which prevail at the present time, prices of materials should be confirmed by inquiry.]

Fletton Bricks have advanced since our last issue.—ED.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the highest or lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

Per 1000 Alongside, in River Thames.	£ s. d.
Best Stocks	2 0 0
Picked Stocks for Facings	2 12 0

Per 1000, Delivered at Railway Depôt, London.

	£ s. d.		£ s. d.
Flettons	1 13 0	Best Blue Pressed Staffordshire	5 0 0
Best Fareham Red	3 12 0	Do. Bullnose	5 5 0
Best Red Pressed Ruabon Facing	5 5 0	Best Stourbridge Fire Bricks	4 15 0

GLAZED BRICKS—

Best White, Ivory, and Salt Glazed Stretchers	13 7 6	D'ble Str'tch'rs	18 17 6
		Double Headers	15 17 6
		One Side and two Ends	19 17 6
Headers	12 17 6	Two Sides and one End	20 17 6
Quoins, Bullnose and 4½ in. Flats	16 17 6	Splays and Squints	18 7 6

Second Quality £1 per 1,000 less than best.

	s. d.	
Thames Ballast	8 3	per yard, delivered.
Thames and Pit Sand	8 6	" " "
Best Washed Sand	9 6	" " "

Per ton, delivered.

	£ s. d.		£ s. d.
Best Portland Cement	2 5 0	..	2 8 0

Do. £2 1s. alongside in 80-ton lots.
Ferrocrete 2s. 6d. per ton extra on above.
Best Ground Blue Lias Lime .. 1 5 6 at rly. depôt.
NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.
Grey Stone Lime ..... 18s. 0d. per yard delivered.
Stourbridge Fireclay in s'cks 30s. 0d. per ton at rly. dpt.

STONE.

	s. d.
BATH STONE—delivered in railway trucks at Westbourne Park, Paddington, G.W.R., or South Lambeth, G.W.R., per ft. cube	1 7
Do. do. delivered in railway trucks at Nine Elms, L. & S.W.R., per ft. cube	1 8½
Do. do. delivered on road waggons at Nine Elms Depôt	1 9½

PORTLAND STONE—

Brown Whitbed, in random blocks of 20 ft. average, delivered in railway trucks at Westbourne Park, G.W.R., South Lambeth, G.W.R., or Nine Elms, or L. & S.W.R., per ft. cube	2 5½
Do. do. delivered on road waggons at Pimlico Wharf or Nine Elms Depôt, per ft. cube	2 6½

White basebed, 2d. per ft. cube extra.

RANDOM BLOCKS—Per Ft. Cube, delivered at Rly. Depôt.

	s. d.		s. d.
Ancaster in blocks	2 0	Closeburn Red Freestone	2 2
Beer in blocks	1 7½		
Grinshill in blocks	2 4	Red and White Mansfield Random block	2 9
Darley Dale in blocks	2 5	Yellow Magnesian Limestone do. do.	3 3

YORK STONE—*Robin Hood Quality.*

Per Ft. Cube, Delivered at Railway Depôt.	s. d.
Scappled random blocks	3 4

Per Ft. Super., Delivered at Railway Depôt.	
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 5
6 in. rubbed two sides, ditto	2 8
3 in. sawn two sides slabs (random sizes)	1 0½
2 in. to 2½ in. sawn one side slabs (random sizes)	0 8½
1½ in. to 2 in. ditto, ditto	0 6½

HARD YORK—

Per Ft. Cube, Delivered at Railway Depôt.	
Scappled random blocks	3 0

Per Ft. Super., Delivered at Railway Depôt.	
6 in. sawn two sides landing to sizes (under 40 ft. super.)	2 3
6 in. rubbed two sides ditto	2 7
3 in. sawn two slabs (random sizes)	1 0
2 in. self-faced random flags	0 5

TILES.

	Per 1,000 f.o.r. London. £ s. d.
Best machine-made tiles or hand-made sand-faced tiles from either Broseley or Staffordshire district	2 12 6
Ornamental ditto	2 15 0
Hip and valley tiles (per dozen)	0 5 6

SLATES.

	Per 1,000 of 1,200 f.o.r. London. £ s. d.
Best Blue Bangor Slates, 20 by 10	11 16 0
First quality " "	11 10 0
" " 16 by 8	5 15 0
Best Blue Portmadoc, 20 by 10	11 13 6
First quality " "	11 3 6
" " 16 by 8	5 15 0

WOOD.

BEST BUILDING REDWOOD. Imported sizes.	Nominal. Per standard. £ s. d.		£ s. d.
Deals: 4 in. by 12 in., 4 in. by 11 in., 3 in. by 11 in., 4 in. by 9 in., and 2 in. by 11 in.	35 0 0	..	36 0 0
3 in. by 9 in., 2½ in. by 9 in., and 2 in. by 9 in.	34 0 0	..	35 0 0

WOOD (*Continued*).

BEST BUILDING REDWOOD.	Per standard. £ s. d.		£ s. d.
Battens: 2 in., 2½ in., and 3 in. by 8 in. ..... 2 in., 2½ in., and 3 in. by 7 in. ..... 2 in., 2½ in., and 3 in. by 6 in.	33 0 0	..	34 0 0
Scantlings: 2 in. by 3 in., 2 in. by 3½ in., 2 in. by 4 in., 2 in. by 4½ in. .... 3 in. by 4 in., and 3 in. by 4½ in.			
Boards: 1 in., 1½ in., and 1½ in. by 6 in. and 7 in.	0 10 0	}	more than
¾ in.	1 0 0	}	battens.
Seconds	1 0 0		less than best
Best Middling Dantzic and Memel Fir Timber Logs (average specification) .. Stocks very limited.	Per load of 50 ft. cube. 10 0 0 ..		—
Sawn pitch pine logs (about 35 cu. ft. average)	Per load. 13 0 0 ..		14 0 0
Do. 6 in. to 10 in.	11 0 0 ..		12 0 0
Best Pitch Pine Deals	Per standard. 35 0 0 ..		36 0 0
Under 2 in. thick	0 10 0		extra.

JOINERS' WOOD.

White Sea First Quality Red:			
4 in. by 11 in.	40 0 0	..	41 0 0
3 in. by 11 in., and 2 in. by 11 in.	39 0 0	..	40 0 0
4 in. by 9 in.	38 0 0	..	39 0 0
3 in. by 9 in., and 2½ in. by 9 in.	37 0 0	..	38 0 0
9 in. by 11 in. boards	1 0 0		more than deals.
7 in. and 8 in. battens	34 0 0	..	35 0 0
7 in. and 8 in. boards	1 0 0		more than battens.
Archangel White Deals—			
Best 5 in. by 9 in. and 10 in. and 11 in.	37 0 0	..	38 0 0
Seconds, do.	2 0 0		less than best.
U.S. Battens	31 0 0	..	33 0 0
Prepared Floorings and Matchings, Seconds Swedish Red and equal—	Per square actual.		
1½ in. by 6½ in. planed and shot	1 16 0	..	1 19 0
1½ in. by 6½ in. planed and matched	1 16 6	..	1 19 6
1 in. by 6½ in. planed and shot	1 9 0	..	1 12 0
1 in. by 6½ in. planed and matched	1 9 6	..	1 12 6
¾ in. by 6½ in. planed, matched, and beaded, or V jointed	1 4 0	..	1 6 0
1 in. by 6½ in. do.	1 10 6	..	1 12 0
Columbian or Oregon Pine, best quality	Per standard. 42 0 0 ..		44 0 0
Yellow Pine—First, regular sizes	57 0 0		upwards.
Oddments	39 0 0		"
Seconds, regular sizes	43 10 0		"
Oddments	37 10 0		"
Kauri Pine—Planks per ft. cube	0 8 0 ..		—
Wainscot Oak Logs, per ft. cube	0 10 6 ..		0 12 6
Dry Wainscot Oak, per ft. super, as inch.	0 1 0 ..		0 1 3
¾ in. do. do. ..	0 0 10 ..		0 1 0
Dry Mahogany — Honduras, Tabasco, per ft. super, as inch	0 1 0 ..		0 1 4
Cuba Mahogany	0 1 6 ..		0 2 6
Dry Walnut, American, per ft. super, as inch	0 1 0 ..		0 1 3
French, "Italian," Walnut ..	0 1 0 ..		0 1 6
Teak, per load (Rangoon or Moulmein)	28 0 0 ..		34 0 0
Do. do. (Java)	25 0 0 ..		27 0 0
American Whitewood planks, per ft. cube	0 6 6 ..		0 7 6

METALS.

JOISTS, GIRDERS, &c.

	In London or Railway Vans, delivered per ton. £ s. d.		£ s. d.
Rolled Steel Joists, ordinary sections, basis price	20 0 0	..	21 0 0
Plain Compound Girders, ordinary sections	22 0 0	..	23 0 0
Plain Compound Stanchions ..	23 0 0	..	24 10 0
Angles, Tees, and Channels, ordinary sections	20 10 0	..	21 10 0
Flitch Plates	20 10 0	..	21 10 0
Cast Iron Columns and Stanchions, plain ordinary patterns ..... (Turning extra.)	13 10 0	..	14 0 0

WROUGHT-IRON TUBES AND FITTINGS—

Discounts off Association Prices.	Tubes. Per Cent.		Fittings. Per Cent.
Gas at works	55	....	57½
Water "	50	....	55
Steam "	45	....	52
Galvanised gas at works	30	....	47½
" water "	23½	....	45
" steam "	17½	....	42½

Ex London 2½ per cent. less than above.

L.C.C. SOIL PIPE— London Prices.

	Pipes Coated. s. d.		Bends. s. d.		Branches. s. d.
2 in.	2 4	....	1 8	....	2 0
2½ in.	2 9	....	1 10	....	2 6
3 in.	3 5½	....	2 0	....	3 0
3½ in.	3 9	....	2 6	....	3 6
4 in.	4 1½	....	2 10	....	4 0

RAIN-WATER PIPES, ETC.— London Prices.

	Pipe. s. d.		Bends. s. d.		Branches. s. d.
2 in.	1 8½	....	0 11	....	1 3
2½ in.	1 10½	....	1 1	....	1 6
3 in.	2 2½	....	1 4	....	2 0
3½ in.	2 8½	....	1 7	....	2 4
4 in.	2 10½	....	1 11	....	2 10

METALS (*Continued*).

L.C.C. DRAIN PIPES— London Prices
4 in., 4s. 1d. .. 5 in., 4s. 10d. .. 6 in., 5s. 11d.

	Per ton, in London. £ s. d.		£ s. d.
IRON—			
Common Bars	16 0 0	..	—
Staffordshire Crown Bars, good merchant quality ..	16 0 0	..	17 0 0
Staffordshire "Marked Bars"	17 10 0	..	18 0 0
Mild Steel Bars	18 0 0	..	18 10 0
Steel Bars, Ferro-Concrete quality, £18 basis price.			
Hoop Iron, basis price	20 0 0	..	20 10 0
" " Galvanised	33 0 0	..	—

(* And upwards, according to size and gauge.)

Sheet Iron Black—			
Ordinary sizes to 20 g.	20 10 0	..	21 0 0
" " 24 g.	21 10 0	..	22 0 0
" " 26 g.	22 10 0	..	23 0 0
Sheet Iron, Galvanised flat, ordinary quality—			
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	31 0 0	..	—
Ordinary sizes to 22 g. and 24 g.	31 10 0	..	—
Ordinary sizes to 26 g.	34 0 0	..	—
Sheet Iron, Galvanised, flat, best quality—			
Ordinary sizes to 20 g.	33 0 0	..	—
" " 22 g. and 24 g.	33 10 0	..	—
Ordinary sizes to 26 g.	36 10 0	..	—
Galvanised Corrugated Sheets—			
Ordinary sizes, 6 ft. to 8 ft. 20 g.	29 0 0	..	—
Ordinary sizes, 22 g. & 24 g.	29 10 0	..	—
Ordinary sizes, 26 g	30 0 0	..	—
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. to 20 g. and thicker	23 10 0	..	—
Best Soft Steel Sheets, 22 g. and 24 g.	23 15 0	..	—
Best Soft Steel Sheets, 26 g. ..	25 10 0	..	—
Cut Nails, 3 in. to 6 in.	24 0 0	..	25 0 0

(Under 3 in., usual trade extras.)

LEAD, &c.

	Delivered in London. £ s. d.		£ s. d.
LEAD—Sheet, English, 4 lb. and up	40 10 0	..	—
Pipe in coils	41 0 0	..	—
Soil pipe	44 0 0	..	—
Compo pipe	44 0 0	..	—

NOTE—Country delivery 20s. per ton extra; lots under 5 cwt. 1s. per cwt. extra.

COPPER—					
Strong Sheet	per lb.	0 1 6	..	—
Thin "	"	0 1 8	..	—
Copper nails	"	0 1 6	..	—
Copper wire	"	0 1 8	..	—
BRASS—				
Strong Sheet	"	0 1 6	..	—
Thin "	"	0 1 8	..	—
TIN—English Ingots ..	"	0 1 11	..	—
SOLDER—Plumbers' ..	"	0 0 11	..	—
Tinmen's	"	0 1 2	..	—
Blowpipe	"	0 1 4	..	—

GLASS.

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES AND IN SQUARES IN ORDINARY SIZES.

Per Ft.		Per Ft.
15 oz. thirds ..... 5½d.	26 oz. fourths	6½d.
" fourths ..... 4½d.	32 oz. thirds	8½d.
21 oz. thirds ..... 6½d.	" fourths	7½d.
" fourths ..... 5½d.	Fluted Sheet, 15 oz.	5½d.
26 oz. thirds ..... 7d.	" 21 oz.	6½d.

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES. Per Ft.

⅛ Rolled plate	4d.
3/16 Rough rolled and rough cast plate	4½d.
¼ Rough rolled and rough cast plate	4½d.
Figured Rolled, Oxford Rolled, Oceanic, Arctic Muffled, and Rolled Cathedral white	5d.
Ditto, tinted	6½d.
Rolled Sheet	4½d.

OILS, &c.

		£ s. d.
Raw Linseed Oil in pipes	per gallon	0 3 2
" " " in barrels	"	0 3 3
" " " in drums	"	0 3 6
Boiled " " in barrels	"	0 3 5
" " " in drums	"	0 3 9
Turpentine in barrels	"	0 3 8
" in drums	"	0 3 11
Genuine Ground English White Lead, per ton (In not less than 5 cwt. casks.)		58 0 0
Red Lead, Dry	per ton	58 0 0
Best Linseed Oil Putty	per cwt.	0 12 0
Stockholm Tar	per barrel	4 5 0
Filocol	per cwt.	0 9 6

GENUINE WHITE LEAD PAINT—

"Blackfriars," "Nine Elms," "Park," and other best brands (in 14 lb. tins) not less than 5 cwt. lots	per ton delivered	70 0 0

VARNISHES, &c.

	Per gallon. £ s. d.
Fine Pale Oak Varnish	0 8 0
Pale Copal Oak	0 10 6
Superfine Pale Elastic Oak	0 12 6
Fine Extra Hard Church Oak	0 10 0
Superfine Hard-drying Oak, for seats of Churches	0 14 6
Fine Elastic Carriage	0 12 9
Superfine Pale Elastic Carriage	0 16 0
Fine Pale Maple	0 10 0
Finest Pale Durable Copal	0 18 6
Extra Pale French Oil	1 1 0
Eggshell Flatting Varnish	0 18 0
White Pale Enamel	1 4 0
Extra Pale Paper	0 12 0
Best Japan Gold Size	0 10 0
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 0
Berlin Black	0 16 0
Knotting	0 10 0
French and Brush Polish	0 10 0

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than 2 p.m. on Wednesday.*

* Denotes *accepted.* † Denotes *provisionally accepted.*

CANNOCK.—For the provision, laying, and jointing of about 319 yds. of 9-in. diameter stoneware pipe sewers and other incidental works, for the Urban District Council. Mr. R. Blanchard, Engineer and Surveyor, Council Offices, Cannock :—

C. Jackson, Tipton* £299

CAVAN.—For the erection of new offices for the Anglo-Celt Company, Ltd. Mr. P. J. Brady, C.E., J.P., architect :—

Prior, Ballinamore, Co. Leitrim* £795

COWES.—For executing the first section of the works required to be carried out on the Victoria Pier, for the Cowes Urban District Council :—

Beavis* £167

ILFORD.—For making up rearway of the Town Hall and adjoining buildings, for the Urban District Council. Mr. H. Shaw, M.Inst.C.E., Surveyor :—

Parsons & Parsons, High-road, Ilford* £309 15 9

KEIGHLEY.—For painting at the Morton Banks War Hospital, for the War Hospital Extension Committee. Messrs. Moore & Crabtree, architects, York-chambers, Keighley :—

E. Thompson, South-street, Keighley* £115 11 10

LONDON.—Accepted by the Metropolitan Water Board for the supply of stores, etc. :—

Battersea (Stock).—Brown York Hydrant Stones.
Moulsons & Mellors, Ltd. £35 0 0

Battersea (Stock).—Lily Brushes.
Crowden & Garrod £27 16 6

Battersea (Stock).—English White Lead.
Grey & Marten, Ltd. £51 1 3

Battersea (Stock).—Shovels.
T. Yates & Co., Ltd. £39 15 0

Kent (Wilmington).—Cast-iron Low-pressure Cylinder Casing.
Stanton Ironworks Co. £54 15 0

Battersea.—Yellow Deal.
Marchant Bros. £37 10 0

Western.—Automatic Valves for Siemens Meters.
R. Laidlaw & Son (Edinburgh), Ltd. £34 16 0

Staines.—Cisterns for Treatment of Water at Staines.
London Galvanised Iron Co. £34 12 0
Croggon & Co., Ltd. 42 0 0

LONDON.—For repairs, decorations, etc., required at the Engineer's house, Brookmill-road, Deptford, S.E., for the Metropolitan Water Board :—

Rice & Sons	£99 0
H. Groves	89 10
Crooks & Co.‡	85 0

‡ Recommended for acceptance.

LONDON.—For the external cleaning and painting of the Board's offices at Savoy-court, W.C., for the Metropolitan Water Board :—

Macey & Sons	£280
J. Stiles & Son	198
Maple & Co.	164
Rice & Sons*	149

NAVAN.—For the erection of the new schools in Navan under the charge of the Christian Brothers De La Salle :—

P. Sheridan, Newbridge, Co. Kildare* £3,549

STOKE-ON-TRENT.—Accepted for painting and decorating various schools, for the Education Committee. Mr. F. M. Maddox, Architect, Town Hall, Hanley :—

H. W. Brundrett, Tunstall	£110 0 0
S. Barlow, Burslem	127 10 0
S. Barlow, Burslem	30 0 0
Birchall & Sons, Hanley	44 6 0
J. Hudson, Stoke	15 7 0
S. Peake & Sons, Stoke	13 0 0
A. R. Peake, Fenton	49 10 0
S. Brough, Longton	125 0 0
A. R. Peake, Fenton	25 0 0
S. Brough, Longton	115 0 0
S. Peake & Sons, Stoke	33 1 5
A. R. Peake, Fenton	50 0 0
T. Hand, Longton	10 5 0

STOWMARKET.—For the erection of nurses' quarters at the Isolation Hospital, for the Urban District Council :—

W. Murray* £171

SWANSEA.—For erecting two shop fronts under the arches of the new ship bridge, for the Parks Sub-Committee :—

G. Davies* £166

WILLENHALL (Staffs).—For the work required in setting back the churchyard wall, etc., in Walsall-street, for the Urban District Council :—

J. Hickin & Sons* £257 10

PATENTS.

APPLICATIONS PUBLISHED.*

20,873 of 1914.—Philip Hopkins Smith: Safety devices for high-pressure reservoirs and the like.

9,932 of 1915.—Alfred Holland and Ernest Richard Royston: Apparatus for mechanically moving or handling material in bulk.

10,076 of 1915.—Henry Pooley & Son, Ltd., and James Dobson: Means for obtaining the weight of railway rails, girders, beams, or similar sectional lengths.

TO CORRESPONDENTS.

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The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications; and the Editor cannot be responsible for drawings, photographs, manuscripts, or other documents, or for models or samples sent to or left at this office, unless he has specially asked for them.

All drawings sent to or left at this office for consideration should bear the owner's name and address on either the face or back of the drawing. Delay and inconvenience may result from inattention to this.

Any commission to a contributor to write an article, or to execute or lend a drawing for publication, is given subject to the approval of the article or drawing, when received, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

N.B.—Illustrations of the First Premiated Design in any important architectural competition will always be accepted for publication by the Editor, whether they have been formally asked for or not.

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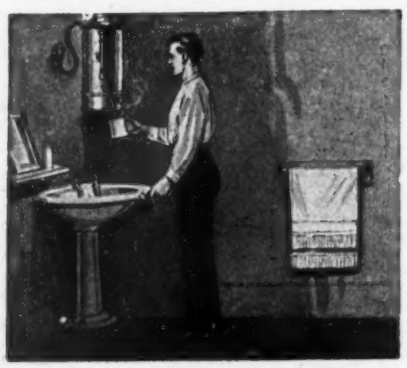
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PROPOSED NEW OFFICES.
LEADENHALL STREET E.C.

MESSRS. TREHEARNE & NORMAN, ARCHITECTS.

(3.)

St. George's Church
Bloomsbury
Nicholas Hawksmore. Architect.

Front Elevation

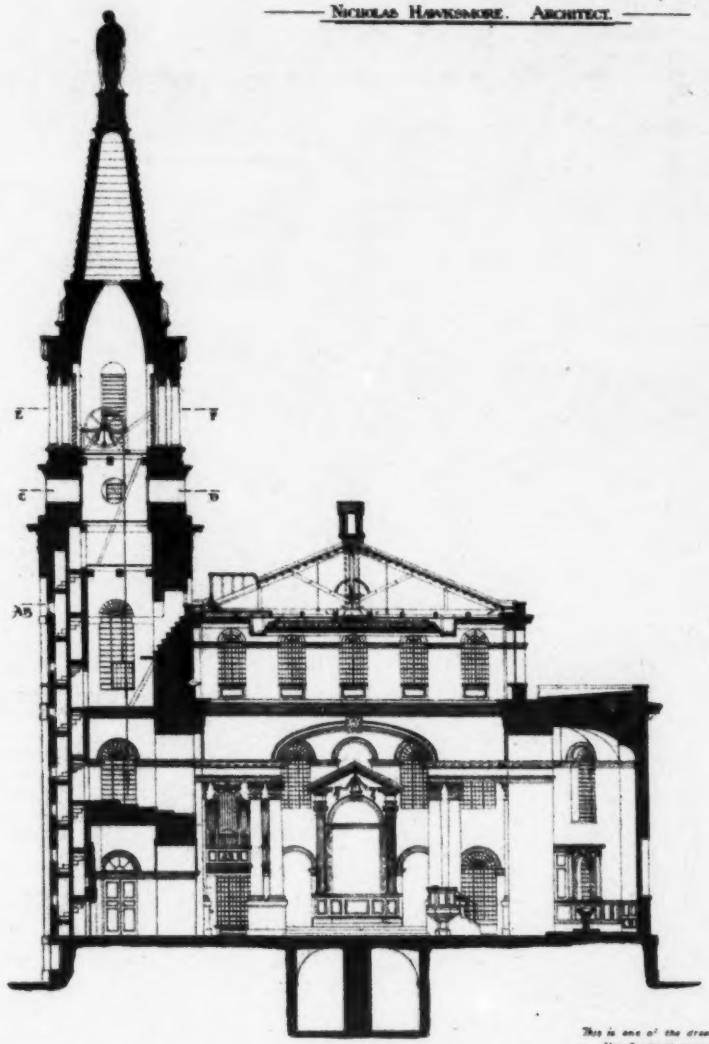
Scale of Feet

This is one of the drawings referred to in the Contract signed by us this 9th day of November 1911
Herbert Adams Gibson

Chas. Phillips Dall, Arch.
16 Great St.
W.C.

(7.)

St. George's Church
Bloomsbury
Nicholas Hawksmore. Architect.



Transverse Section

Scale of Feet

This is one of the drawings referred to in the Contract signed by us this 9th day of November 1911
Herbert Adams Gibson

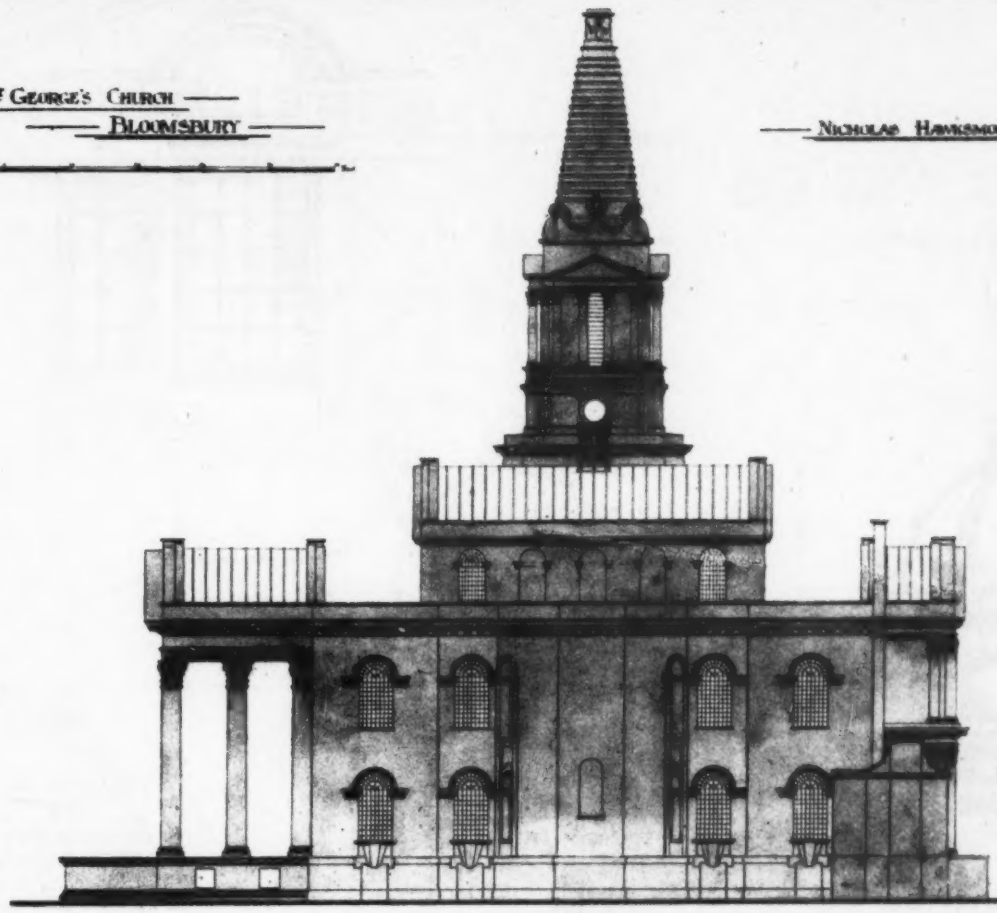
Chas. Phillips Dall, Arch.
16 Great St.
W.C.

ST. GEORGE'S CHURCH, BLOOMSBURY.

St George's Church
Bloomsbury

Nicholas Hawksmore, Architect.

6



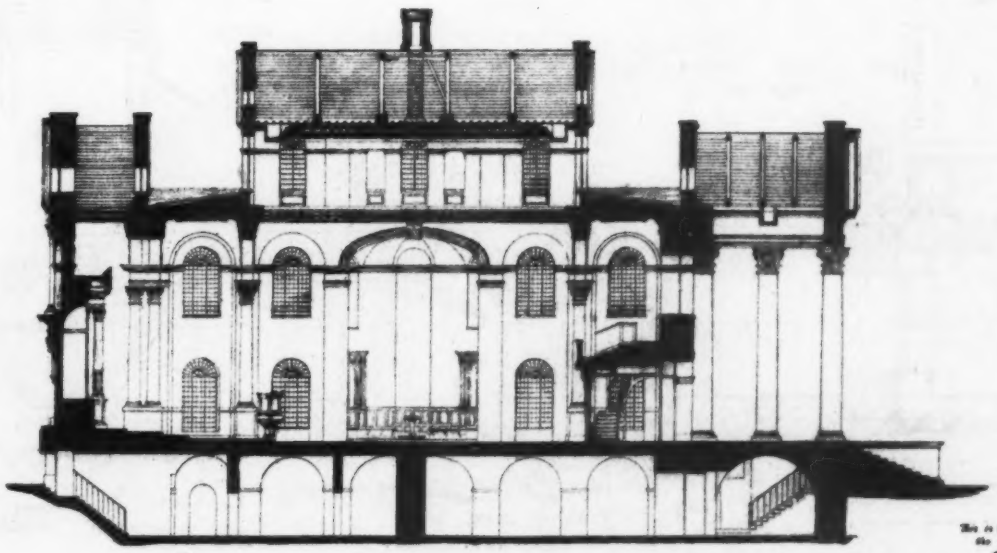
This is one of the drawings referred to in the Contract signed by us this fifth day of November 1917.
Andrew Flanagan Ltd

Chas. Phillips Dell, Archt
80 Gower St
W.C.

East Elevation

St George's Church
Bloomsbury.
Nicholas Hawksmore, Architect.

8



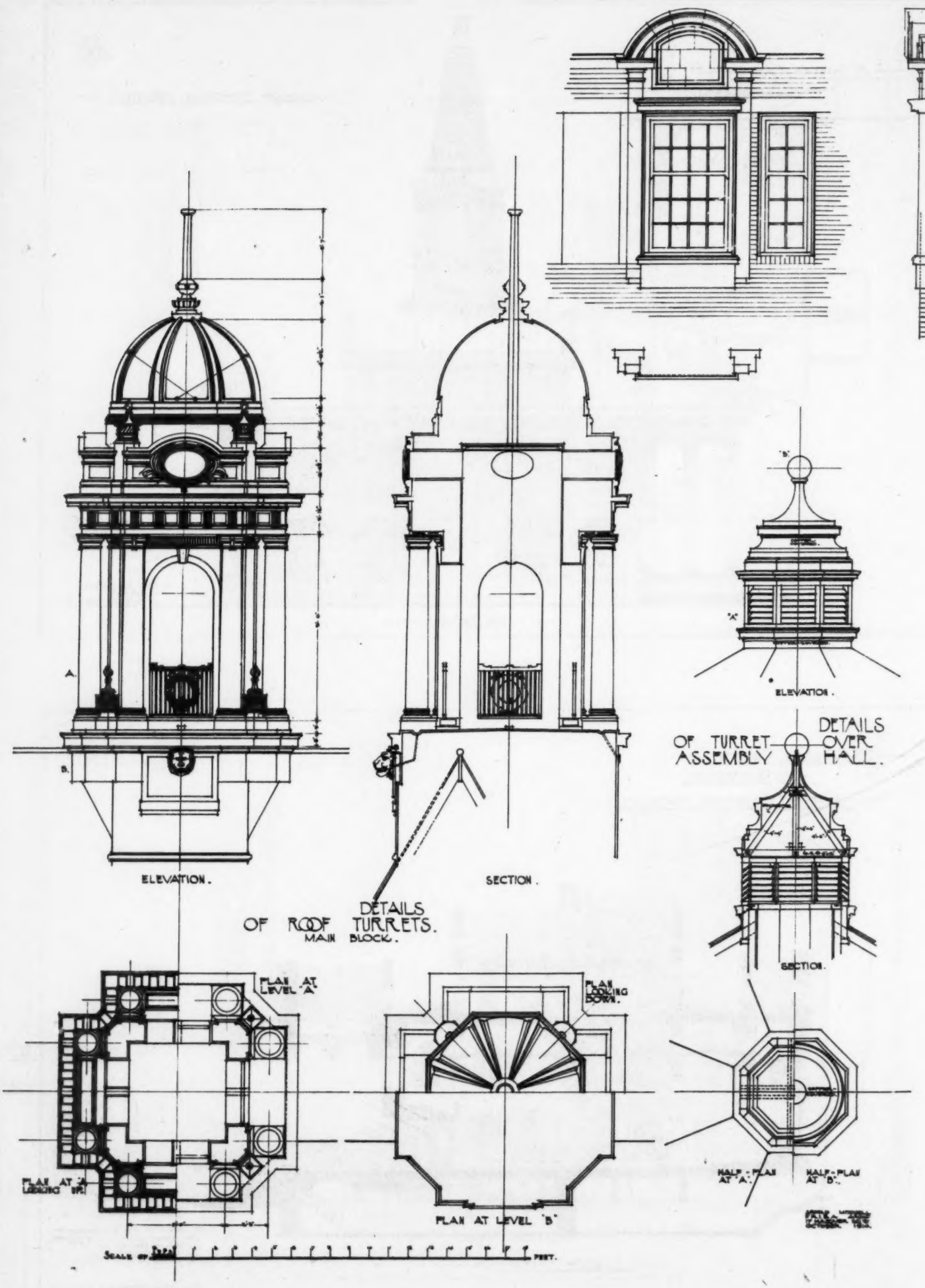
This is one of the drawings referred to in the contract signed by us this fifth day of November 1917.
Andrew Flanagan Ltd

Chas. Phillips Dell, Archt
80 Gower St
W.C.

Longitudinal Section

ST. GEORGE'S CHURCH, BLOOMSBURY.

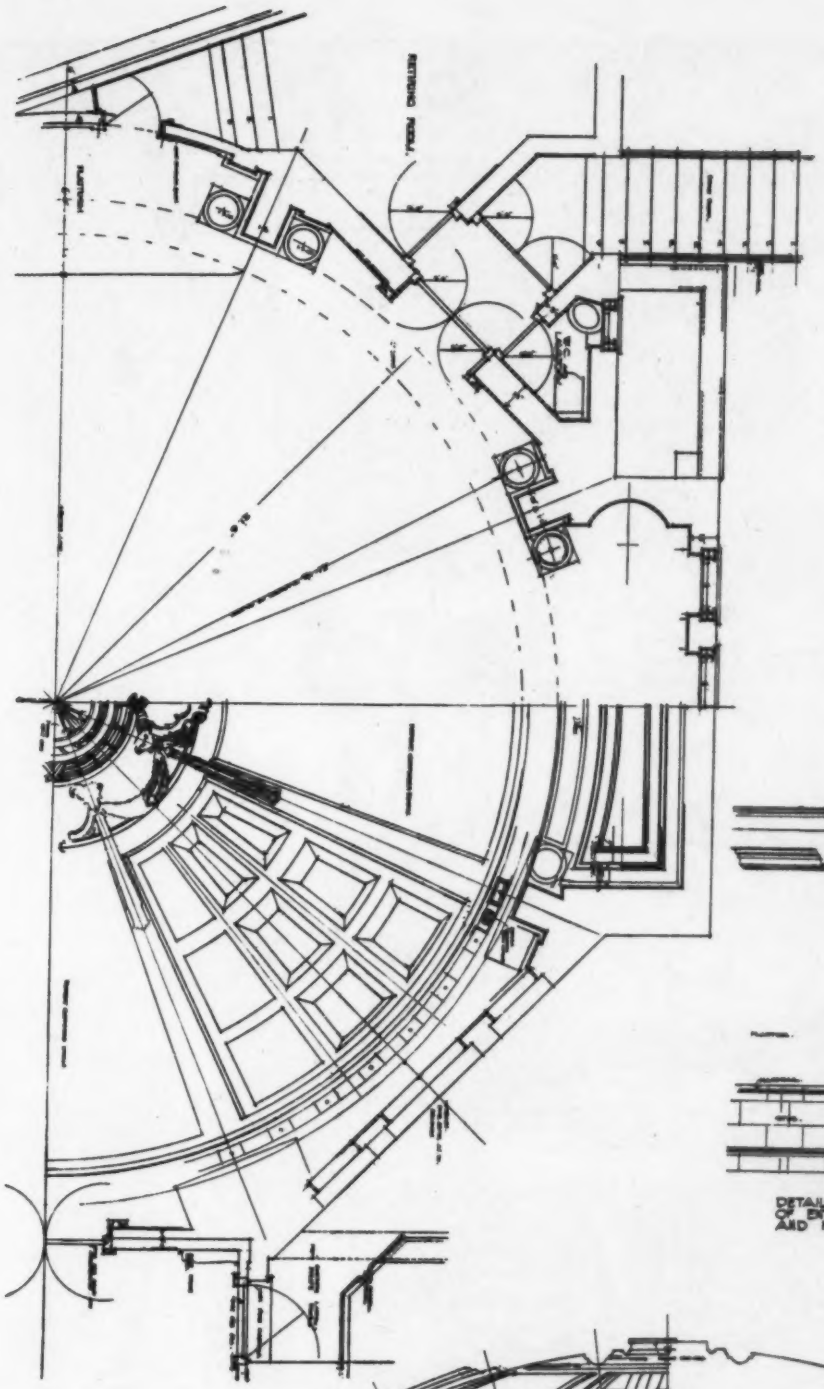
ST. GEORGE'S CHURCH, BLOOMSBURY.

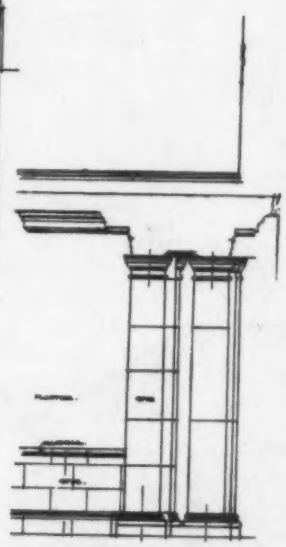


NORTH WESTERN POLYTECHNIC. KENTISH TOWN. N.W.—MR. ARNOLD MITCHELL, F.R.I.B.A., ARCHITECT.

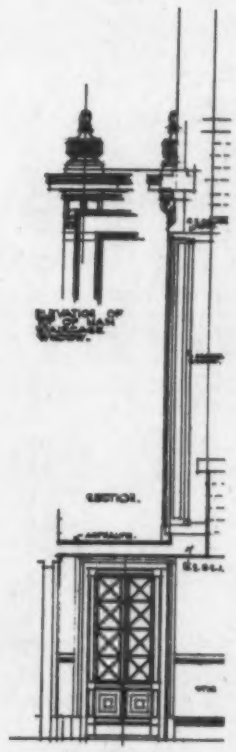
NORTH WESTERN POLYTECHNIC
KENTISH TOWN N. W.

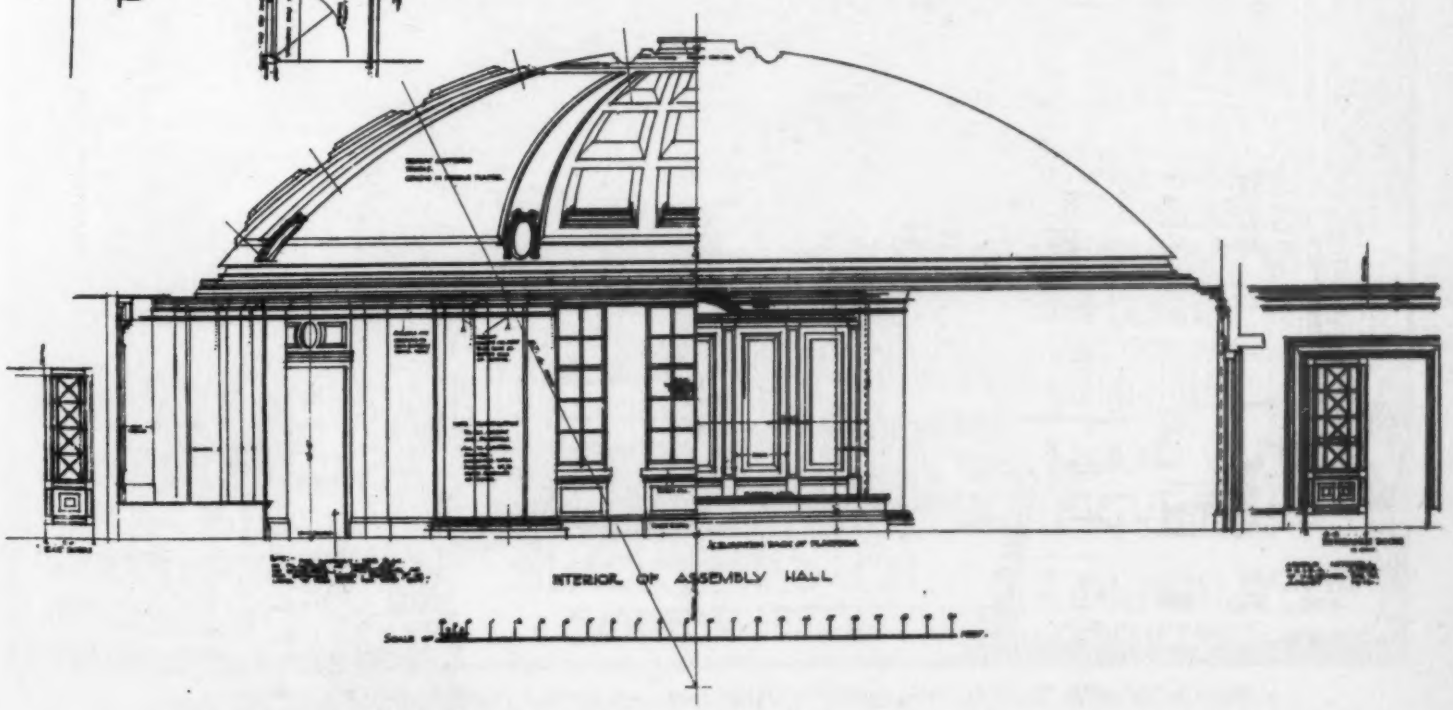
DETAILS OF ASSEMBLY HALL.





DETAIL OF ANGLE OF ENTRANCE HALL AND MAIN STAIRCASE.

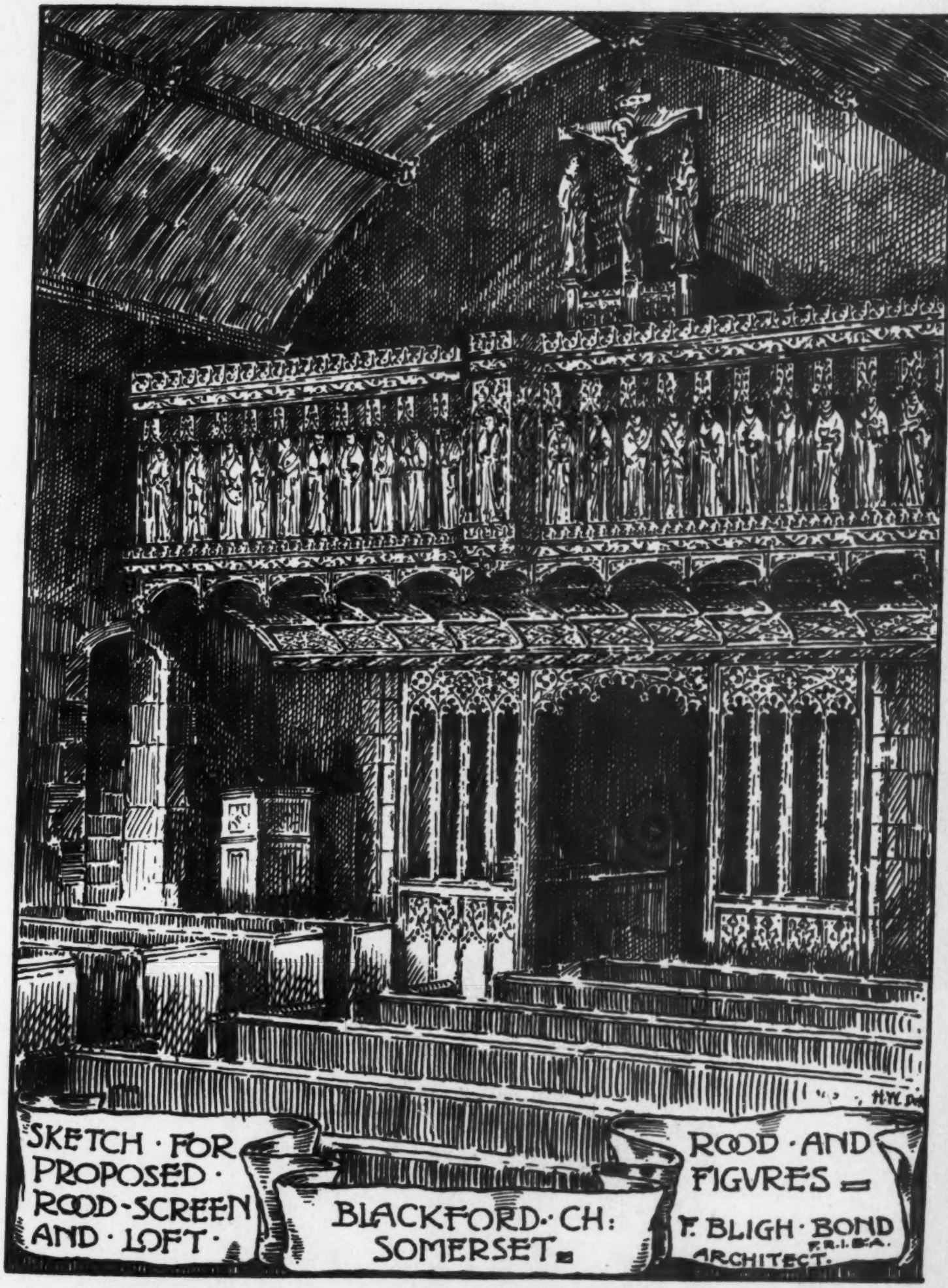




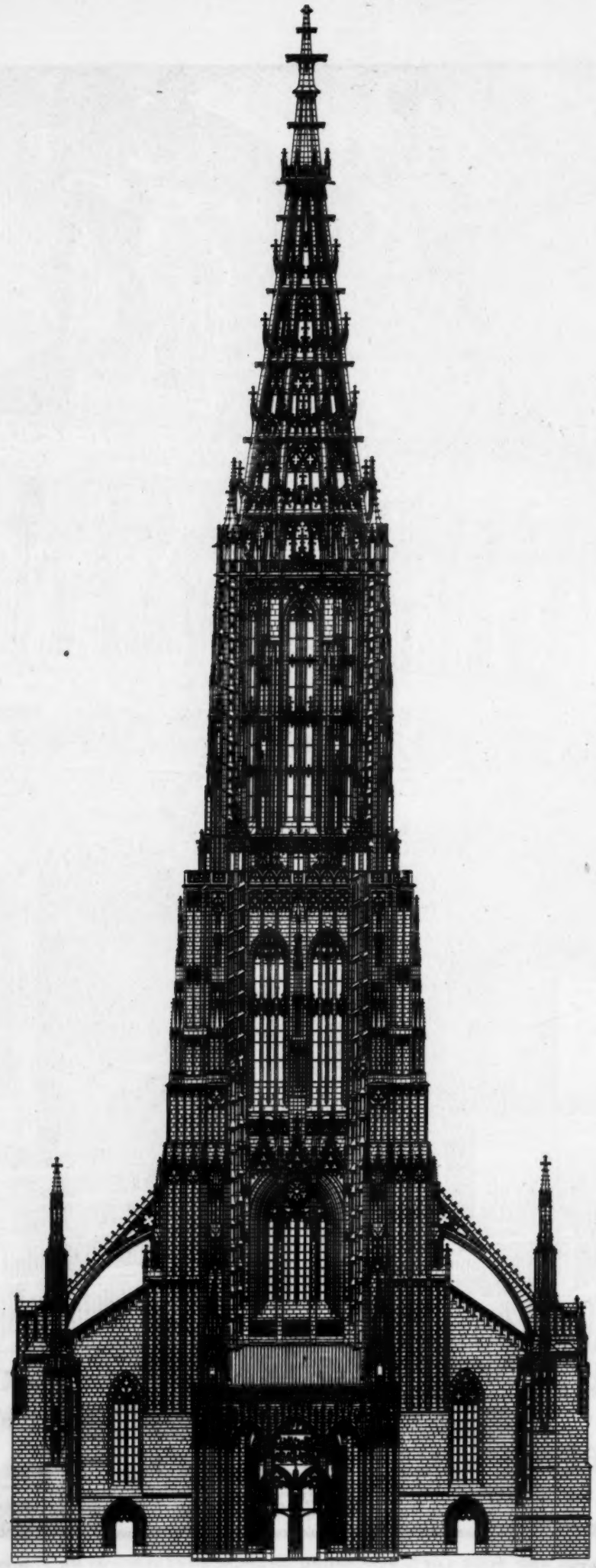
INTERIOR OF ASSEMBLY HALL

NORTH WESTERN POLYTECHNIC. KENTISH TOWN. N.W.—MR. ARNOLD MITCHELL. F.R.I.B.A., ARCHITECT.

MANCROFT TOWERS, OULTON, SUFFOLK.—MESSRS. G. J. SKIPPER, F.R.I.B.A., & F. W. SKIPPER, ARCHITECTS.



DESIGN FOR SCREEN AND ROOD LOFT, BLACKFORD CHURCH, SOMERSET.—BY MR. F. BLIGH BOND, F.R.I.B.A.



ULM CATHEDRAL.